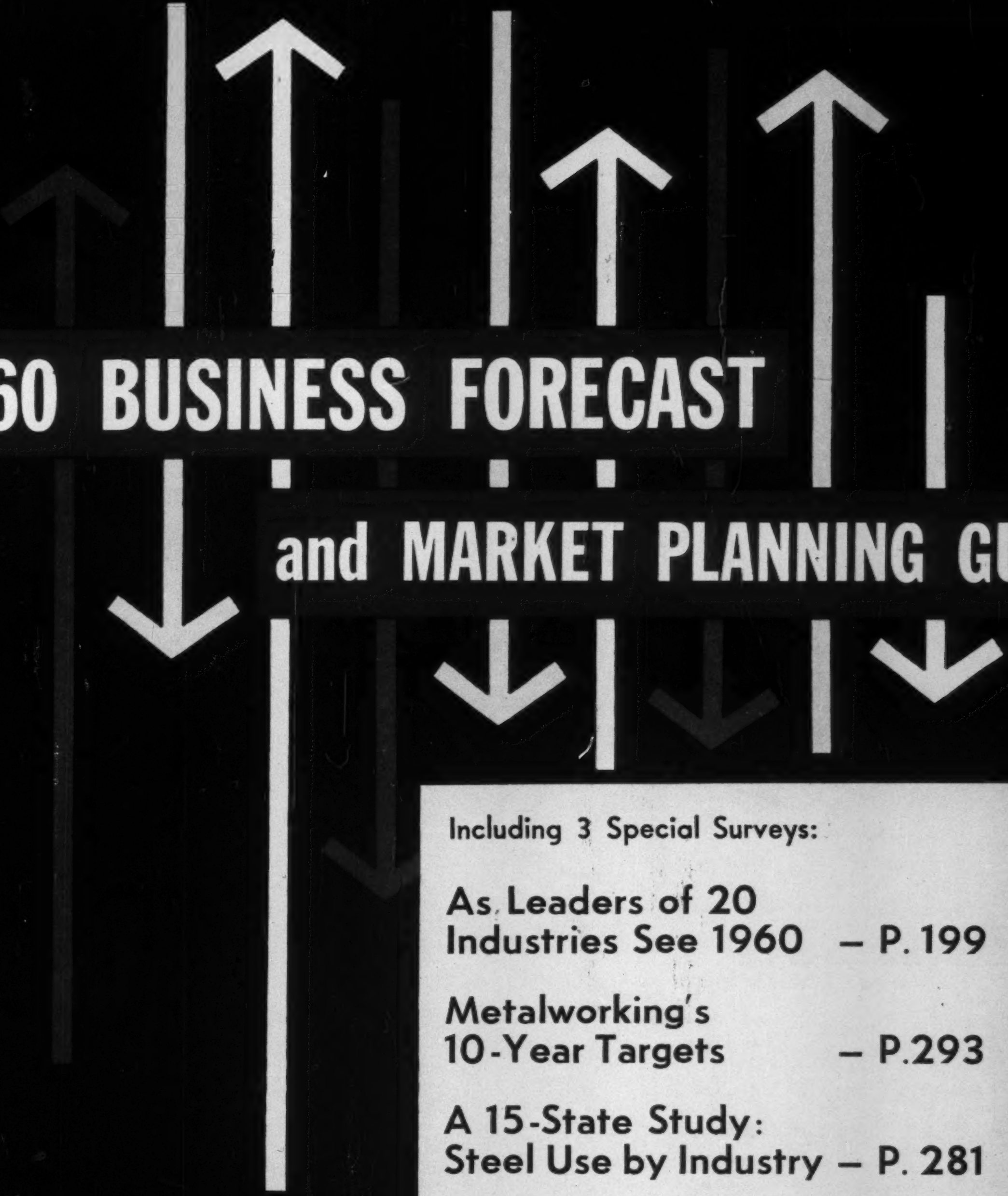
The IRON AGE

105TH ANNUAL ISSUE • A CHILTON PUBLICATION • JANUARY 7, 1960



1960 BUSINESS FORECAST

and MARKET PLANNING GUIDE

Including 3 Special Surveys:

As Leaders of 20 Industries See 1960 – P. 199

Metalworking's 10-Year Targets – P.293

A 15-State Study: Steel Use by Industry – P. 281

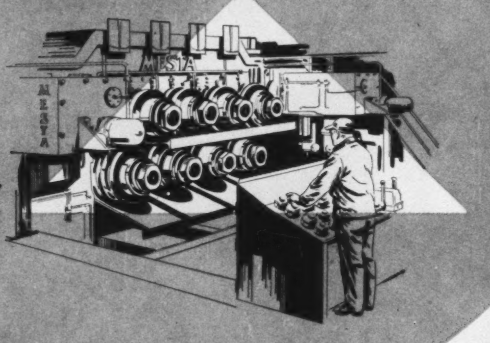
Digest of This Issue – P. 2-3

WIDE FLANGE BEAM
and
STRUCTURAL MILLS

Designed and Built by
MESTA

MESTA
MESTA

Rolling Wide Flange Beams in the 40" Finishing Mill Stand on the MESTA Universal Structural Mill at Inland Steel Company



Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

Look who burned his finger ...at a backyard barbecue

If a Bethlehem steelworker is injured, it happens at home more often than in the steel plant. As a matter of record, he's many times safer on the job than he is at home.

For example, in a recent 12-month period the 20,000 men normally employed at our Bethlehem, Pa., plant sustained a total of 152 disabling accidents at home or on the highways. During the same period these employees had only 19 lost-time accidents at work in the plant. In other words, exactly 8 such accidents *outside* the plant for every one that occurred while at work.

For every one of the past 17 years a Bethlehem plant has won first place in the National Safety Council's annual contest among the nation's 20 largest steel plants.

It is heartening to know that in America the advances in steel technology have been more than matched by the accomplishments in the field of human safety.

BETHLEHEM STEEL

BETHLEHEM STEEL

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Philadelphia 39, Pa., SH 8-2000
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January 7, 1960—Vol. 185, No. 1

Digest of 1960 Outlook for

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GENERAL OUTLOOK

More Improvement — A survey of top level executives in 19 metalworking industries shows optimistic thinking for 1960. Sales should be higher, profits up a little more and prices up only slightly. General consensus: A good year. P. 199

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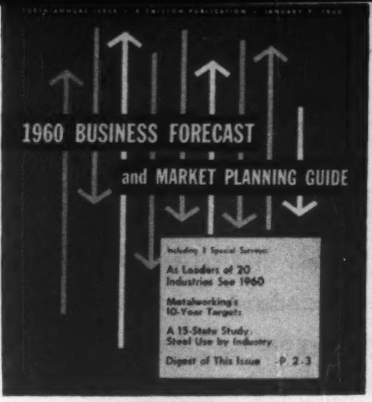
Metalworking



1960 BUSINESS FORECAST
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As Leaders of 20 Industries See 1960
Metalworking's 10-Year Targets
A 15-State Study Steel Use by Industry
Digest of This Issue P 2-3

◄

105th ANNUAL ISSUE: The overall business outlook for 1960 is highly favorable. But the degree of prosperity will vary by industry. This year's annual issue tells the outlook for over a score of metalworking groups. It also provides three major features to help management in its 1960 planning.

Nonferrous Foundries — Sales, profits to climb. P. 254

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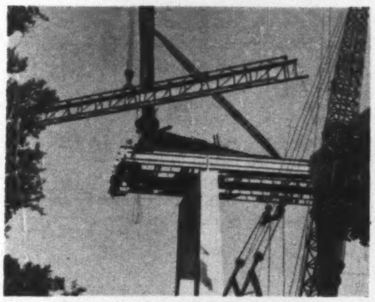
New High Ahead—Steel and automotive lead the way to a new production record. Capital spending could be the sleeper. P. 161



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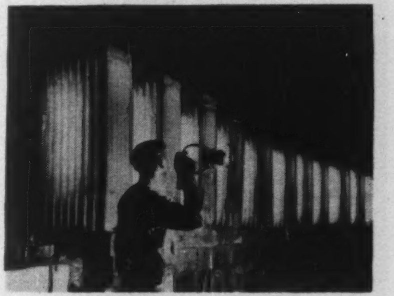
MARKETING GUIDES TO NEW BUSINESS

TEN-YEAR OUTLOOK

Soaring '60's—Metalworking will make steady progress during the next ten years along with the rest of the economy.

The gross national product may hit $700 billion by 1970 and is expected to pass the $500 billion mark this year.

This ten-year business forecast tells how metalworking will fare in our expanding economy. P. 293



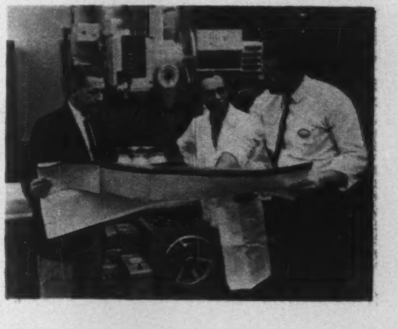
STEEL CONSUMPTION SURVEY

New Management Tool—Special study reports use of six major steel products by metalworking in 15 states for 1959 with a forecast for first half of '60. Breakdown by 3-digit SIC groups provides new data of type proved most useful for market planning. P. 281

NEXT WEEK

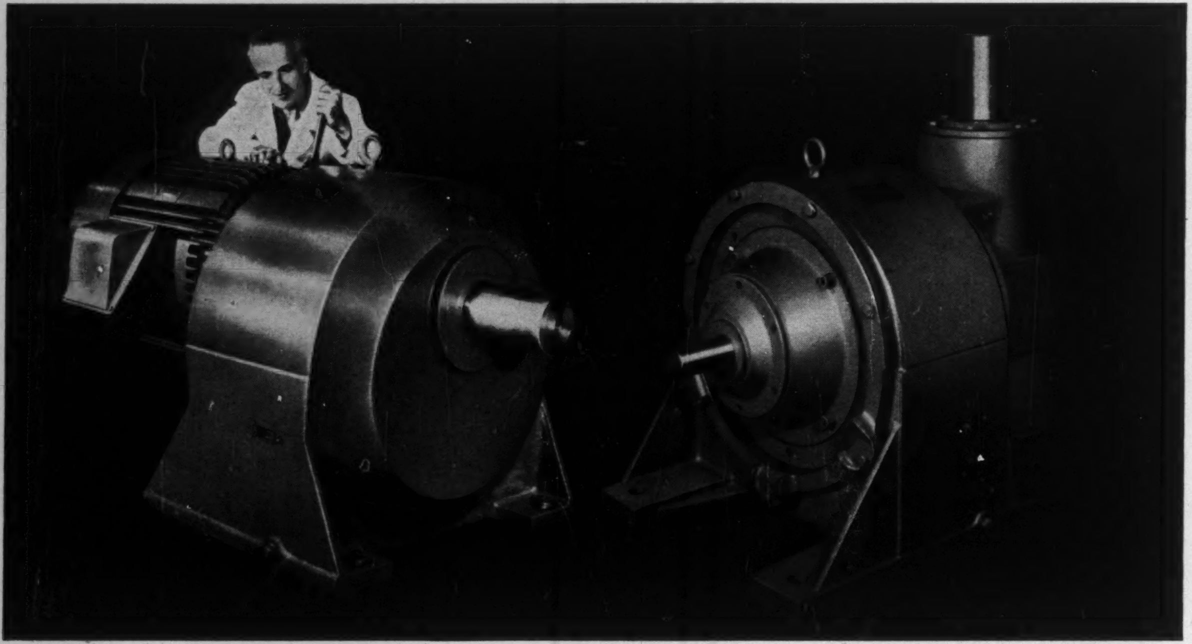
PROGRAMMED MACHINING

Another Advance—Industry has been successful automating both traverse and longitudinal jig boring operations through tape controls. Next week's technical feature describes the latest advance: Controlling the depth of bore.



NOW... high horsepower Gearmotors and In-Line Reducers that weigh less, have increased load carrying capacity

The gearing in these drives is case hardened and precision ground, a development so advanced that conventional standards and ratings are suddenly out-of-date. You get commercial gear drives with gearing of master gear quality, plus a whole new set of engineering advantages. They are available in standard sizes to 200 H.P.



(Left) 75-HP GEARMOTOR.
Application: heavy duty machine tool drive.

(Right) 50-HP IN-LINE REDUCER with right angle attachment.
Application: conveyor drive.

LONGER LIFE

Extreme accuracy of tooth profiles, profile spacing and surface finish eliminates "running in" and resulting gear wear.

HIGHER SPEEDS

Dynamic load factors are reduced. Reducers operate at higher speeds, have increased load carrying capacity.

REDUCED VIBRATION

Reduced tooth to tooth errors, accumulated pitch errors and total composite errors give smoother contact.

SPACE AND WEIGHT SAVINGS

Harder materials, plus major reductions in load factors, save weight and space without sacrificing performance.

REDUCED SOUND LEVELS

For applications where low sound levels are important, gear noise is no longer a controlling factor.

100% INTERCHANGEABILITY

Duplicate units or spares can be installed with original manufacturing tolerances duplicated exactly.

Write today for catalog GM-60

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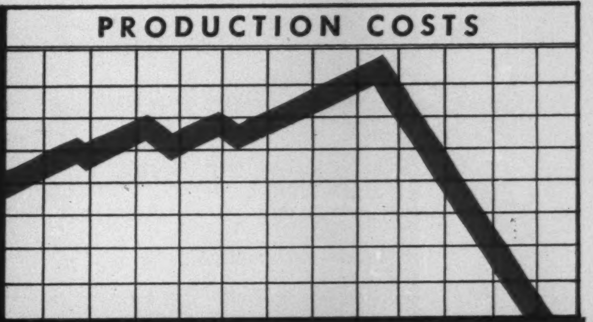
We "lower the line" for others...

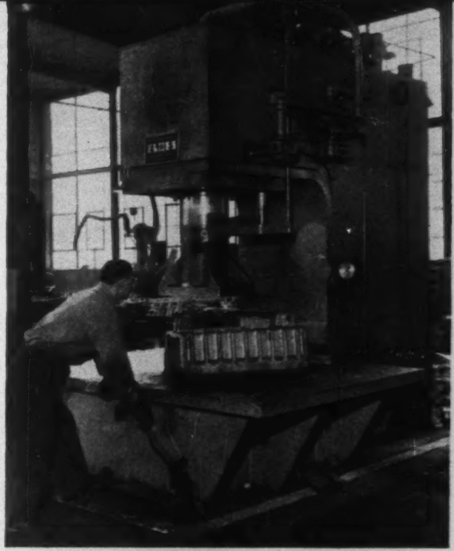


We can lower it for You!

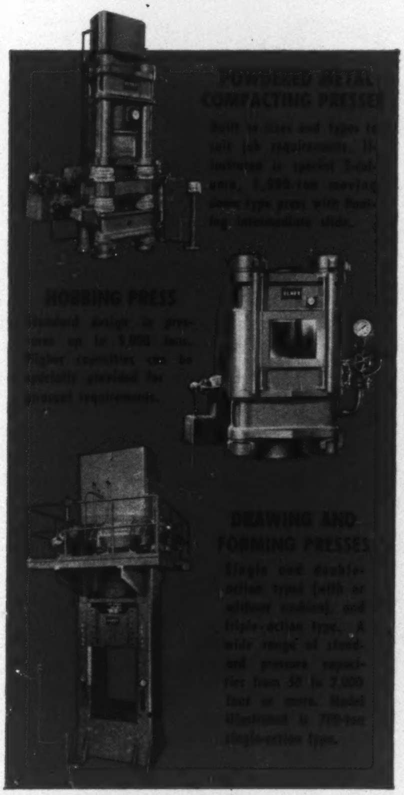
Time after time, production men come to Elmes for help in combating rising costs on jobs involving presswork. And time after time, Elmes engineers provide *job-fitted* installations that result in cost-lowering, profit-making performance.

Solving "pressing problems" is not new for Elmes, where an outstanding leadership in hydraulic service has been maintained for over half a century. Sometimes the answer is found in a standard design Elmes® Press, or a standard design with modifications. Or, in unusual situations, special custom-built units may be needed. In any case, an Elmes recommendation will meet requirements *exactly*—an Elmes installation will provide *high productivity, trouble-free operation, minimum maintenance.*

Get a new "line" on *your* production costs. Talk it over with your nearby Elmes Distributor, or write to us direct.



(Right) Elmes 250-Ton Open-Side Press straightening steel castings on a high production schedule. Proved 40% faster than presses previously used, it is also more accessible, more economical to operate.



POWDERED METAL COMPACTING PRESSES

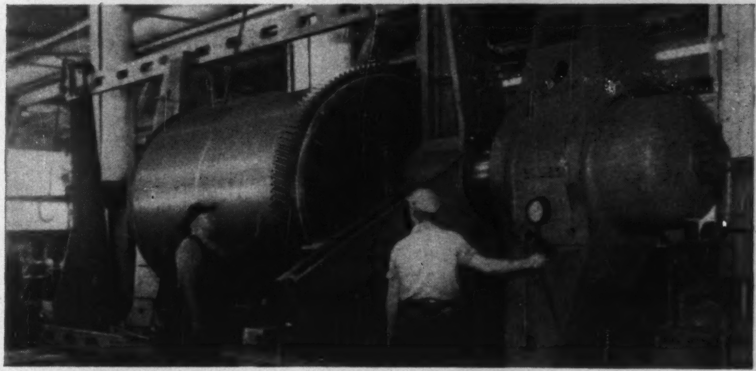
Built in sizes and types to suit job requirements. Illustrated is special 3-column, 1,000-ton moving down type press with floating intermediate slide.

HOBBING PRESS

Standard design in pressures up to 3,000 tons. Higher capacities can be specially provided for special requirements.

DRAWING AND FORMING PRESSES

Single and double-action types (with or without cushion), and triple-action type. A wide range of standard pressure capacities from 50 to 2,000 tons or more. Model illustrated is 700-ton single-action type.



Elmes 500-Ton Inclined Forcing Press is shown pressing a 4-ton gear on a 33,000 lb. hoisting drum for a huge ladle crane. Pressure of 120 tons was required to force the gear into place. User reports 50% savings in costs of these large gear installations with the Elmes equipment—"job-fitted" for maximum productivity with low costs.

Elmes American Steel Foundries
ENGINEERING DIVISION

1166 Tennessee Avenue, Cincinnati 29, Ohio

METAL-WORKING PRESSES • PLASTICS MOLDING PRESSES • PUMPS • ACCUMULATORS

FOR NEW
DESIGN
FLEXIBILITY...
BEAUTY...
PRODUCT
LIFE...
SPECIFY

Sharon stainless

Sharon Stainless Steels excel in the things you need to make your appliance more attractive... more durable. Tolerance, drawing ability, dense smooth finish, you name it ... Sharon stainless includes the best combination ... manufactured to your exact need.

Consider too, Sharonart*, Sharon's exciting new rolled-in surface patterned steel—opening a new breadth of design flexibility for the appliance designer. Sharonart* made of stainless steel will reflect an infinite variety of color and texture combinations. Many beautiful patterns available.

For the stainless you need to make your product even better—get in touch with your Sharon representative —or write us direct. *Sharon Steel Corporation, Sharon, Pa.*

* T.M.

SHARONSTEEL

SHARON *Quality* **STEEL**

THE IRON AGE EDITORIAL

The Job At The Top: Powder Puffs Need Not Apply

This is the season for exhortations. It is the time for slogans and new horizons. Stop here if that is what you expect to read.

Easy pickin's are over. He who doesn't know it better find out. These fabulous sixties will be tricky. Propaganda or canned motivation aids will not substitute for tough sledding.

There isn't going to be an easy time for the top fellow in business. And he isn't going to make it easier for the man below on the organization chart—if there is one.

On the matter of prices: They have to be kept down or at least kept from skyrocketing. The union bosses are blind to the trend against high wages and high prices. The public is fed up. They don't want excuses—or defenses.

When higher prices appear, a little more of our economy is lost to a good foreign sales pitch and well planned foreign production. That's bad. Add to this their ageless experience in world trading. We don't have it now. We had better regain some of it.

Some day union chiefs will wake up. They will be forced to do their part. Management can't force them to do it any more than a father can live his 30-year-old son's life.

Somehow, management must produce more at a lower cost; sell more at stable or lower prices. It must do all it can to keep labor costs in check. But in the end, management will be judged more harshly than will labor.

Among all management worries there is one which gets no attention: There are too many "yes" men. It isn't always their fault. It is the pattern of the times—a formula for "getting ahead." It won't work as well anymore.

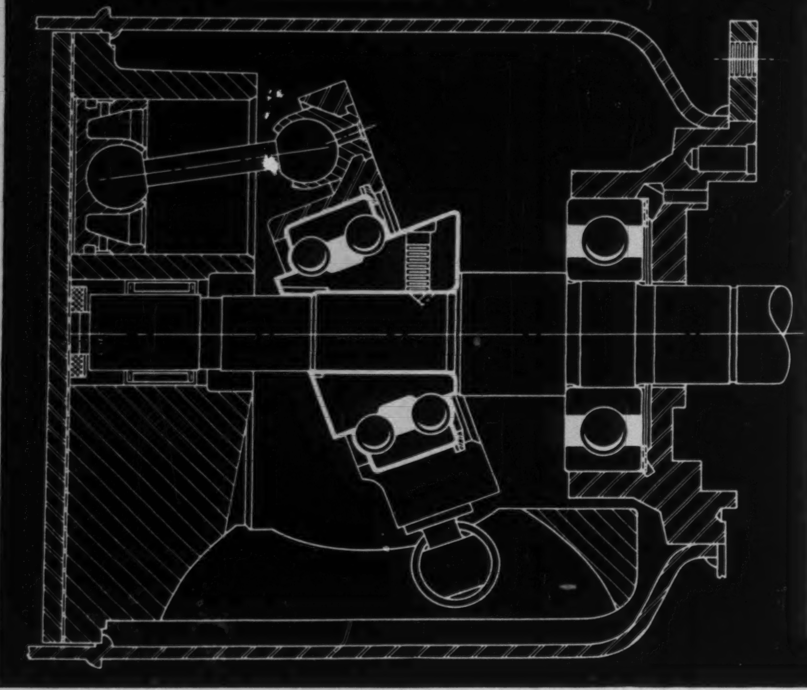
Decisions must be made at the top with details furnished by others. That's good. It's proper. But unless new thinking, new changes and new outlooks are clear to the leader, he may make unsound judgments. So he needs to hear the truth as it is—not as he may like it to be.

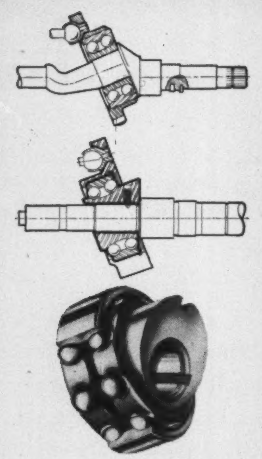
There is too much at stake in the next 15 years to have many misjudgments. Top level briefings are not enough anymore. The boss must get his feet wet again. He must get the lowdown from people who are not afraid of being fired.

The pinnacle is no bed of roses. It requires more than enlightened mediocrity. It needs more than textbook or graduate school methodology. It needs broad, human, intelligent knowledge—and experience—more than it ever has before.

Tom Campbell
Editor-in-Chief

CASE HISTORIES





Redesign of high capacity compressor shaft and bearing assembly eliminated costly angled shaft in favor of unique, efficient ball bearings.

Illustration: Courtesy, Frigidaire Division, General Motors Corporation

Unique N/D Wobble Plate Ball Bearing Simplifies Axial Compressor Design!

CUSTOMER PROBLEM:

In developing the ideal compressor for automobile air conditioning unit, customer engineers faced the problem of further design simplification and refinement of pilot model.

SOLUTION:

N/D Sales Engineer, in co-operation with customer, pointed out a possible design simplification in the crankshaft bearing assembly. By providing a specially designed N/D precision ball bearing with shaft bore at an angle, a straight shaft could replace the original pilot model crankshaft. The wobble plate angle would then be supplied by the bearing rather than the shaft. First tests proved the new and simpler shaft/bearing assembly met customer's rigid performance standards in high capacity compressor. Final testing of some 300 pilot models, both in the laboratory and on road test cars, finalized the design. Now . . . all GM air conditioner equipped cars are cooled with the aid of N/D ball bearings.

If *you're* working on new designs . . . or redesigning, why not call your N/D Sales Engineer. He knows the performance possibilities of virtually every ball bearing made . . . and, *he knows what can be done with special bearing designs!* For more information write New Departure Division, General Motors Corporation, Bristol, Connecticut.

NEW DEPARTURE
BALL BEARINGS
proved reliability you can build around

Automatic Warehousing

First installation now being debugged in an automotive parts supplier plant will bring a major advance in automatic warehousing. Using static controls, the system will sort, count, collect and release for shipping the proper mix of instrument clusters. It utilizes plant overhead areas, not previously used, for big savings in costly production space.

Adapts Electric Furnaces

Another midwestern electric furnace company has completed initial work in adapting its furnaces to oxygen-gas additions during meltdown. The process looks very favorable for high production levels in specialty steels.

Expect Tinplate Record

Look for tinplate shipments to set a new record in 1960. Steel mills expect to hit about 7 million tons in the year although first half output will probably be under the 4 million tons of 1958. Normally 60 pct of all tinplate for a year goes out in the first half; in 1960, the second half will be almost as strong as the first.

Shapes Stone with Torch

Of interest to the metalworking industry may be Linde Co.'s new rocket-jet torch. The torch carves and shapes stone up to five times faster than with mechanical tools. Oxygen and kerosene combine to produce the hot (5500°F) flame. High nozzle velocity of 7000 fps join with the intense heat to cause the stone to spall.

Leads to Embrittlement

Presence of phosphorous, antimony, arsenic, tin, manganese, and silicon in steel promotes susceptibility to embrittlement at 450°C. The most potent of these elements is antimony. Other conclusions of research recently performed in England: steel containing carbon, nickel, chromium, and molybdenum is not susceptible to embrittlement within 1000 hours at 450°C; molybdenum retards but does not prevent development of embrittlement.

New Anodizing Process

Aluminum can be protected against alkali media as well as seashore and industrial atmospheric conditions by a new anodizing process. According to the developers, Colonial Alloys Co., the new process affords protection to aluminum parts used in the automotive, aircraft, household appliance, and building construction fields.

Improved Gold Alloy

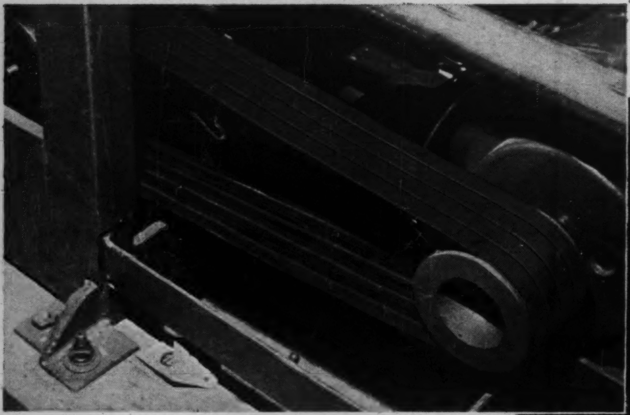
Key to the success of a new gold-antimony alloy is the homogeneous dispersion of the antimony-rich phase. Developed by Englehard Industries, Inc., the alloy is used to "dope" semiconductor materials with a controlled amount of antimony evaporated from the alloy.

Enters Metalworking Field

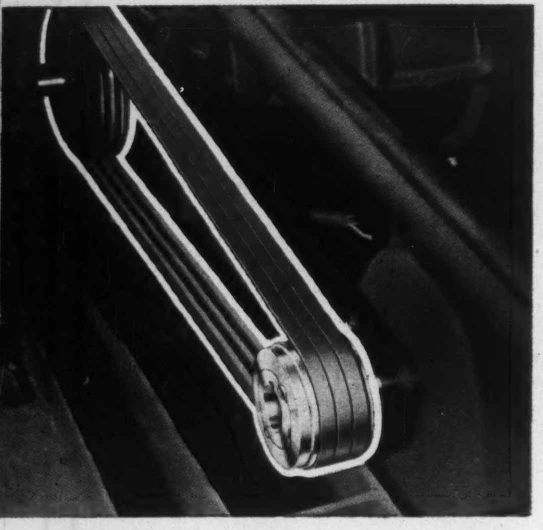
This year will see the marketing of a new electron beam unit by Hamilton Standard, div. of United Aircraft Corp. It marks the division's first major step out of the aviation field in 40 years. The new process and its equipment can perform operations on the hardest materials impossible with any other process, according to the company.

Protects Columbium

The problem of high temperature oxidation of columbium is relieved by a new coating, developed by the Naval Research Lab. It prevents oxidation of columbium up to 2200°F by automatically "healing itself." The coating is made of zinc which is alloyed with the columbium. At high temperatures, the zinc is slowly released from the alloy and forms a protective coat on the metal.



Before: Four standard belts were required to drive the clothes pressing unit manufactured by a Utah company.



After: Three Gates Super HC V-Belts now handle the redesigned pressing unit drive — save more than 16 pounds in drive weight — 24% in drive cost.

Utah manufacturer cuts drive cost 24% with new high capacity V-Belt

Drive weight reduced 16 pounds per unit!

This manufacturer is just one of many who have already turned to Gates Super HC V-Belts to achieve far more compact, lighter weight, lower cost V-belt drives for all types of machines. With new Super HC V-Belts, sheave dimensions can be reduced 30% to 50%, overall space up to 50%, and drive weight by 20% and more.

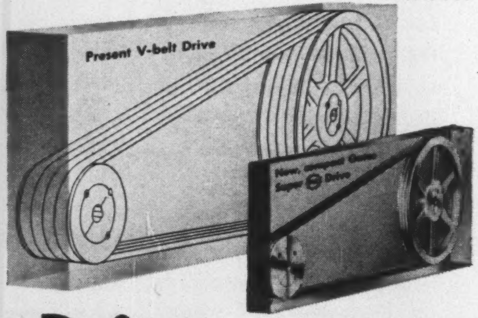
A product of Specialized Research in the world's largest V-belt laboratories at Gates, the Super HC V-Belt Drive is already standard equipment on production models in virtually every industry.

Engineering Service Nation-Wide

Whatever your plant's power transmission design problem, wherever you are, your nearby Gates Distributor or Field Representative is ready to assist you to cut space, weight, and costs with Super HC. Ask him for a copy of *"The Modern Way to Design Multiple V-Belt Drives."*

TPA 447

The Gates Rubber Company, Denver, Colorado
Gates Rubber of Canada Ltd., Brantford, Ontario



Gates

World's Largest Maker of V-Belts

Gates Super HC V-Belt Drives

same hp capacity in smaller "package"

LETTERS FROM READERS

Relative Costs

Sir—We are interested to know if you, or anyone of your acquaintance, has ever studied the relative costs of a maintenance crew of sufficient size to do all required maintenance in a five day week versus a smaller crew working six days without production on the sixth day.

We do not have records to conduct such a study ourselves and thought you may have conducted a similar study.

Possibly the readers of your publication might have some comment. —C. A. Beckwith, Supt. of Maintenance, Motor Wheel Corp., Lansing, Mich.

▪ We have not taken any survey of this type and know of none that have been conducted. However, it's an interesting thought.—Ed.

Pillow Talk

Sir—Being a female and the wife of a steelworker who was laid off for seven months last year (due to low business conditions, but not a strike), I would like to point out to you where the last paragraph in your Dec. 10 editorial might possibly be wrong.

I might also add that the Union is wrong, too, in thinking that any housewife or working wife is going to take the time to read any printed matter that comes from main headquarters with the hope of catching her eye. It'll probably be pitched into the wastebasket just as quickly as circulars inviting magazine subscriptions, grocery lists and last month's bills. My experience with the official Steel Labor newspaper that my husband gets, due to his membership in the CIO, is that it receives a non-stop trip from the mail box to the wastebasket!

The average steelworker does not like (1) unpaid, overdue bills, (2) time on his hands day after day, (3) absence of the usual little "luxuries," (4) loans from friends, relatives, banks, and (5) an unhappy wife. His wife, due to the female's desire for security (so the psychiatrists say), feels twice as strongly about an upset daily existence as does her spouse. So, if she is going to have any influence on the way her husband votes in that booth all alone, it's going to be because he wants to take care of item (5) just as quickly as possible!

Ask any man with an unhappy wife!—Name Withheld.

Maintenance

Sir—I have just read your feature article, "How To Get More For Your Metalworking Dollar—Maintenance.

Would you please mail me three additional copies. I feel that the information in this article will be very beneficial to our Maintenance Department.—T. E. Jarman, Chief Plant Engineer, Hayes Aircraft Corp., Birmingham, Ala.

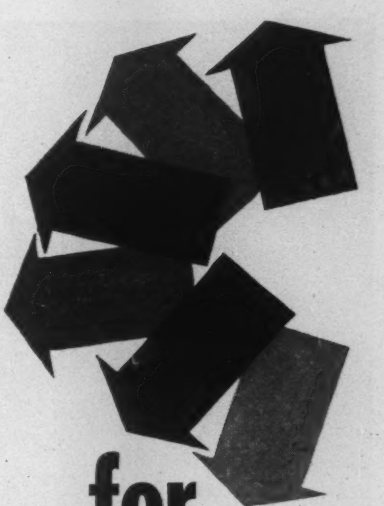
Sir—We would like to have two reprints of the article.

We feel that this article is very excellently written and covers the subject. We hope that it will be of some help to us in setting up our own preventive maintenance system. —John Gissey, Chief Engineer, H. P. Snyder Mfg. Co., Inc., Little Falls, N. Y.

Sir—Your article on the "Maintenance Dollar" was of such real value to me that I'd like to distribute several copies to key people in this organization.

May I have three reprints?—P. A. Repino, Plant Engineer, Lebanon Steel Foundry, Lebanon, Pa.

▪ Reprints have been mailed.—Ed.



for one source

STANDARDIZE ON SOUTHERN FASTENERS

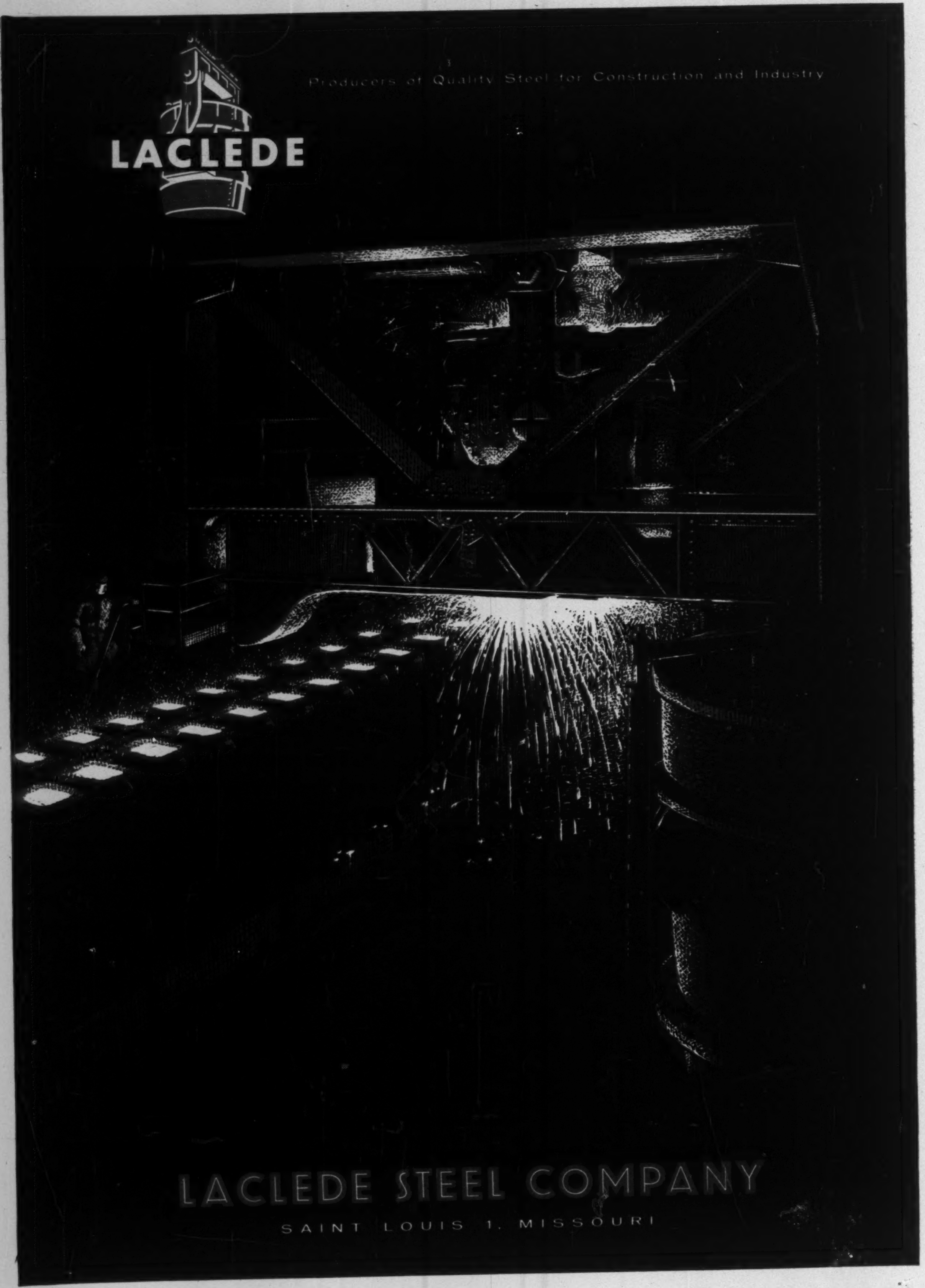
Southern has many customers who know that for every screw requirement, Southern is the source "from which all fine fasteners flow." Southern is proud of being recognized as the source for customers who order and receive screws of highest quality, on time, and at a fair price.

If you haven't tried Southern as the source for your requirements, one order will convince you that you've been missing something. Write for Southern's current Stock List. Address: Southern Screw Company, P. O. Box 1360, Statesville, North Carolina.

Machine Screws & Nuts ● Wood Screws ● Tapping Screws ● Stove Bolts ● Drive Screws ● Hanger Bolts Carriage Bolts ● Dowel Screws

Manufacturing and Main Stock
in Statesville, North Carolina
Warehouses:
New York • Chicago • Dallas • Los Angeles

Southern
SCREW COMPANY
STATESVILLE • NORTH CAROLINA



Producers of Quality Steel for Construction and Industry

LACLEDE

LACLEDE STEEL COMPANY
SAINT LOUIS 1, MISSOURI

FATIGUE CRACKS

Tell-Tale Test

One of our editors got a severe jolt last week, and right where it hurts most—professional pride.

He was out on a reporting assignment for a future story, something about how businessmen can save themselves a lot of time if they learn to read fast and accurately.

The Lady Asked—His reporting took him to the Philadelphia office of the Reading Laboratory Inc., a speed reading and comprehension school. Everything was going fine, he thought, until he was asked to take the speed and comprehension test "just to get the feeling of the course."

Sure, he replied, mentally chalking up an all-time record for the test. After all, fast, accurate reading on the copy desk and in his editorial work was his profession. And he thought modestly, he was pretty good at it.

Kind Note—But the test was an eye-opener. Not only wasn't he a very fast reader, but his comprehension wasn't up to what it should be. It showed much room for improvement. Red-faced, he muttered something like "very interesting," and retreated.

Maybe he'll take the course.

Boss's note: He will, or else. . . .

In All 50

There's nothing that pleases us more than thinking about how The IRON AGE is quoted and referred to authoritatively in the daily press across the country.

But now, we have the distinction of being quoted not just in the old-fashioned 48 states, but in all 50.

Both Hawaii and Alaska followed their old counterparts in coverage of the present steel situation. In Alaska the Ketchikan News and the Anchorage Daily News picked up IRON AGE information on what was happening in the negotiations.

And out in the blue Pacific, the Honolulu Star Bulletin also had an article on the strike based on IRON AGE coverage.

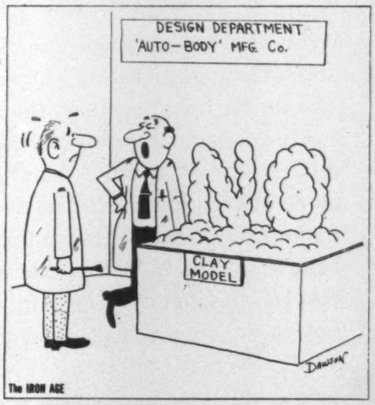
In Reverse

Engineers at Niagara Falls have an uphill project on their hands. They're going to pump the water that cascades over the famous honeymoon spot back up to near where it started down.

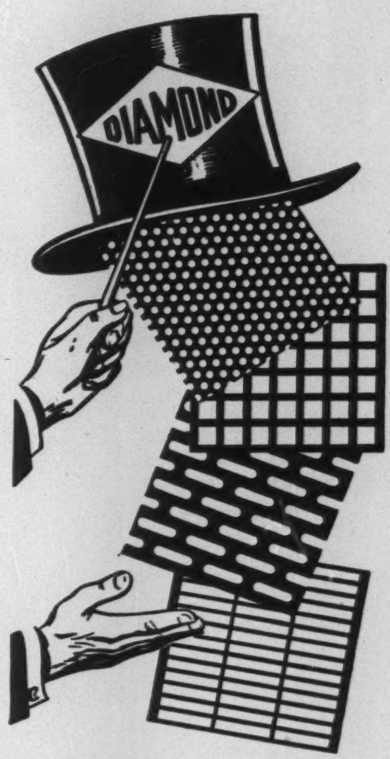
This water will increase the supply available to electric generating stations in the area. A present treaty with Canada limits the amount of water that can be diverted from Niagara Falls and used to turn electric generators.

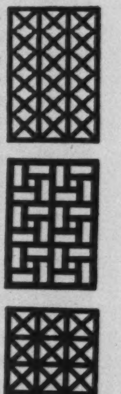
Two Opinions — The engineers point out that water flowing over the Falls at night goes to waste. By pumping it back up, this water can be used to meet daytime industrial electrical needs.

We wonder if the thousands of couples, standing hand-in-hand watching the swirling water, ever thought it was being wasted.



"I looked over your model, Cranston, and now I suppose you're wondering if I liked it or not."





Top-Hat Quality IN Perforated Metal

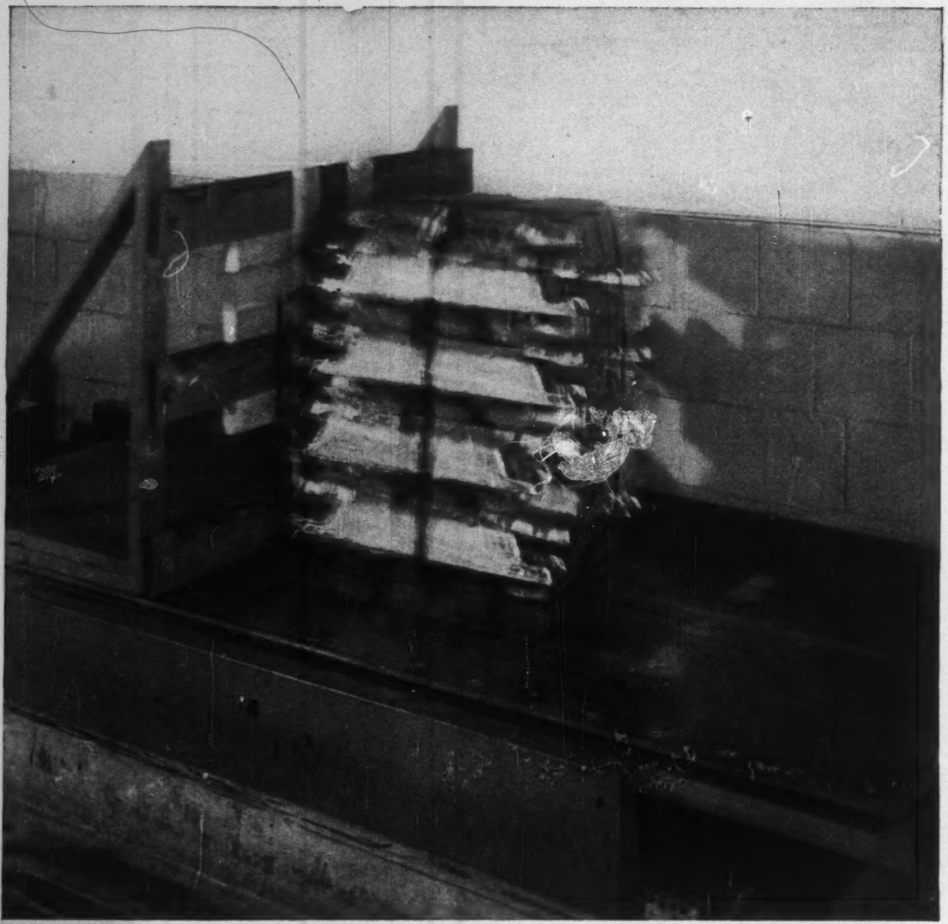
The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.

DIAMOND MFG. CO.
WYOMING WILKES BARRE AREA PA.

Manufacturers of DIAMONTEX, the Perforated Metal Lay-in Panel for better Acoustical Ceilings. New Bulletin No. 47 gives complete illustrated information. Write for free copy.



Vibration test of ingot bundle. Signode vibrator handles up to 3 tons at accelerations over one G.

After test, equivalent to the effect of expected actual handling and transit, the bundle still looked like this.

Shake well before shipping!

A neat 2,300 pound bundle of aluminum ingots becomes 44 ingots trying desperately to go their separate ways...driven by the joggles and jolts of the vibration tester in the Signode Packaging Laboratory. The ingots hold together, though. They're bound to...by 51 cents worth of steel strapping pulled to about 3,000 pounds tension. We don't know of another material that could do this job at all...let alone at such low cost. And consider the savings of having Signode find out *in advance* and at no cost to you how to make your product behave in transit. This is one more way Signode helps make things cost less to handle, store, ship, and receive. For further information, talk to the Signode man near you, or write:

First in steel strapping

SIGNODE STEEL STRAPPING CO.
2623 N. Western Avenue, Chicago 47, Illinois
Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

COMING EXHIBITS

Plant Maintenance & Engineering Show — Jan. 25-28, Convention Hall, Philadelphia. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Tool Show—April 21-28, Detroit Artillery Armory, Detroit. (American Society of Tool Engineers, 10700 Puritan, Detroit 38.)

Welding Show—April 25-29, Great Western Exhibit Center, Los Angeles. (American Welding Society, Inc., 33 West 39th St., New York 18.)

Southwestern Metal Show — May 9-13, State Fair Park, Automobile Bldg., Dallas, Texas. (American Society for Metals, Metals Park, Novelty, O.)

Design Engineering Show — May 23-26, Coliseum, New York. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Production Engineering Show—Sept. 6-16, Navy Pier, Chicago. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Machine Tool Exposition—Sept. 6-16, International Amphitheatre, Chicago. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Iron & Steel Show—Sept. 27-30, Cleveland Public Auditorium, Cleveland, O. (Association of Iron & Steel Engineers, 1010 Empire Bldg., Pittsburgh 22.)

MEETINGS

JANUARY

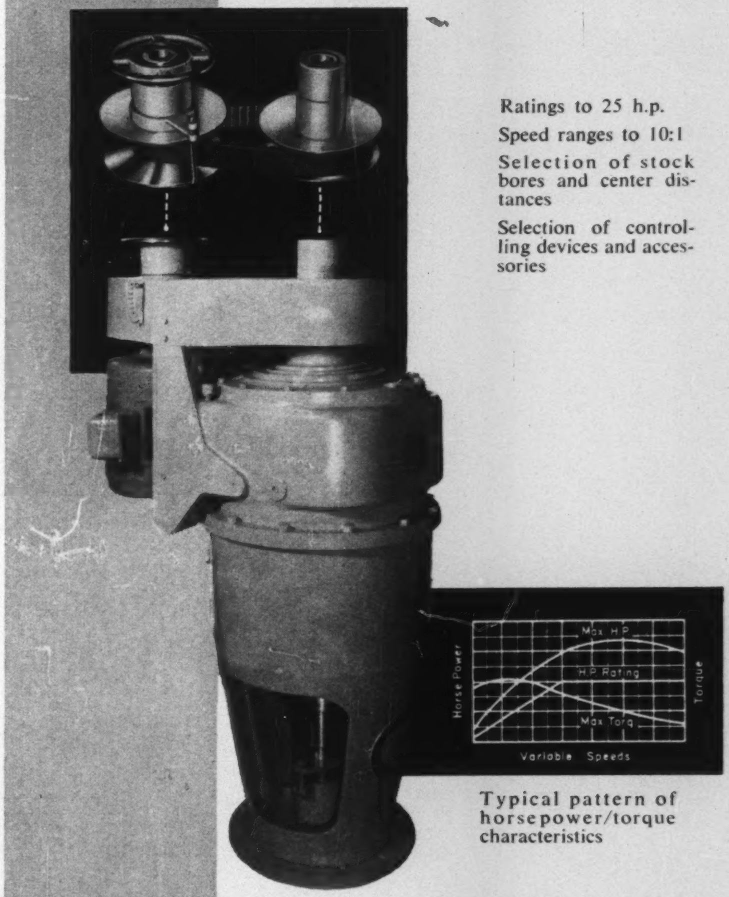
Institute of Scrap Iron & Steel, Inc. —Annual convention, Jan. 10-13, Fontainebleau Hotel, Miami Beach, Fla. Institute headquarters, 1729 H St., N. W., Washington, D. C.

Society of Plastics Engineers, Inc. —Annual technical conference,

(Continued on P. 18)

LEWELLEN

COMPONENTS INCORPORATE VARIABLE SPEEDS



Ratings to 25 h.p.

Speed ranges to 10:1

Selection of stock bores and center distances

Selection of controlling devices and accessories

Typical pattern of horsepower/torque characteristics

The shaft of a standard motor and the equipment input shaft mount the drive.

With an 1800 r.p.m. motor, any input speed from 500 to 4000 r.p.m. is available.

Handwheel adjusts speeds while running, without altering shaft center distance.

Shaft and bearing loads are normal. No thrust loads are imposed. No beefing or supporting structure is required.

Installation is quickly and easily made. Normal service requires only routine lubrication.

Sustained performance with overload capacity is obtained.

Lewellen Combination Pulleys offer a direct, compact, economical method for applying variable speeds.

Catalog 70 defines and dimensions the performance, convenience and utility of Lewellen Pulleys.

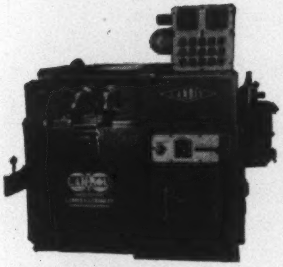
LEWELLEN

Manufacturing Company, Columbus, Indiana

Distributors in All Industrial Areas. In Canada—
Peerless Engineering Sales, Ltd., Toronto-Montreal

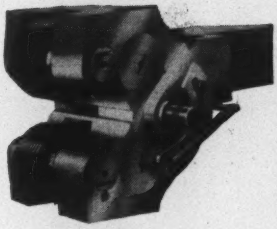
3

LANDIS HAS ALL THREE



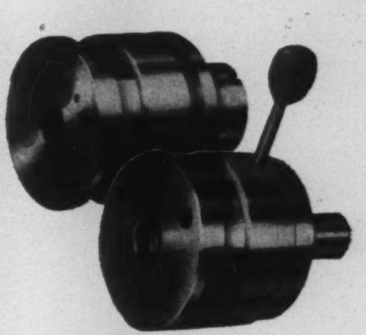
THREAD ROLLING MACHINES

. . . produce strong, accurate threads of excellent finish by the chipless, cold-forming process . . . produce left- and right-hand threads of all types (except square), including UNC, UNF, Acme, worm, and many special forms.



THREAD ROLLING ATTACHMENTS

. . . produce either straight or tapered threads . . . exclusive features include: tipping to avoid indexing interference . . . simple design allows disengaging attachment without disturbing set-up . . . and a gage determines precise position where vertical centerlines of both rolls and workpiece coincide.



THREAD ROLLING HEADS

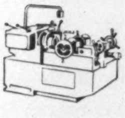
. . . produce Class 4 threads of excellent finish at high speeds . . . feature replaceable helix angle bushings which allows rolling threads with exact helix angles without purchasing major head components.

Whatever your Thread Rolling requirement, there is a LANDIS machine or tool to do the job. Our detailed knowledge of the most efficient application of the different methods of thread rolling—and our more than 50 years experience in the threading field—has resulted in our producing a complete line of thread rolling equipment. Make LANDIS your one-stop source for all your thread rolling needs. When inquiring about Thread Rolling, describe your operation and send specifications.

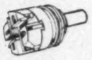
LANDIS *Machine* COMPANY

THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT

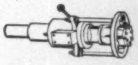
WAYNESBORO
PENNSYLVANIA



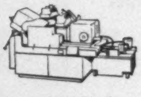
Threading Machines



Die Heads—
Rotary & Stationary

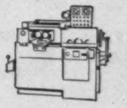


Taps—Collapsible
& Solid Adjustable



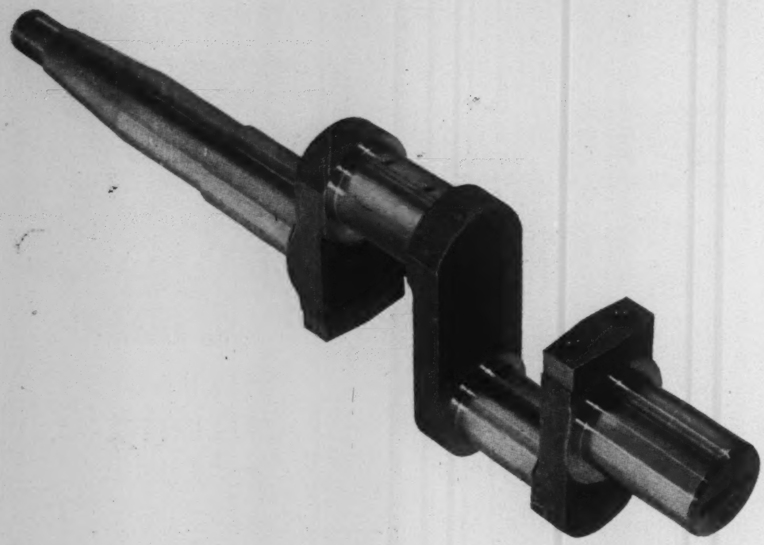
Centerless Thread
Grinding Machines

Thread Rolling Tools



Thread Rolling Machines

550C



DUCTILE IRON SAVED MONEY

This seventy pound ductile iron crankshaft was made for air compressors manufactured by The Brunner Division of Dunham-Bush, Inc. The increased loads and impact resistance called for by new compressor design specifications required rigidity and strength beyond the limits of the cast iron alloy shafts formerly used. Ductile iron was chosen because the rigidity, yield strength and wear characteristics comfortably exceed operating requirements.

A major cost advantage was realized in this case. Hamilton Foundry used existing pattern equipment made for the gray iron crankshafts in the switch to ductile iron. This saved the cost of new foundry patterns and the greater cost of dies needed for steel forgings. Dunham-Bush achieved a major improvement in product performance for the modest additional cost of the metal in the castings.

When new and unusual design problems arise in the selection of metal and the casting of parts, you will find that the skill and integrity of your foundry is your best insurance that specifications—and delivery schedules—will be met.

GRAY IRON • ALLOYED IRON • MEEHANITE® • DUCTILE (NODULAR) IRON • NI-RESIST • DUCTILE NI-RESIST • NI-HARD

H®

HAMILTON FOUNDRY INC.

1551 LINCOLN AVENUE • HAMILTON, OHIO • TWinbrook 5-7491

MEETINGS

(Continued from P. 15)

Jan. 12-15, Conrad Hilton Hotel, Chicago. Society headquarters, 65 Prospect St., Stamford, Conn.

Society of Automotive Engineers, Inc.—Annual meeting, Jan. 12-16, The Sheraton-Cadillac and Statler Hotels, Detroit. Society headquarters, 485 Lexington Ave., New York.

Industrial Heating Equipment Assn., Inc.—Annual winter meeting, Jan. 18-19. Warwick Hotel, Philadelphia. Association headquarters, 1145 19th St., N. W., Washington, D. C.

Steel Shipping Container Institute, Inc.—Winter meeting, Jan. 19-20, St. Regis Hotel, New York. Institute headquarters, 600 Fifth Ave., New York.

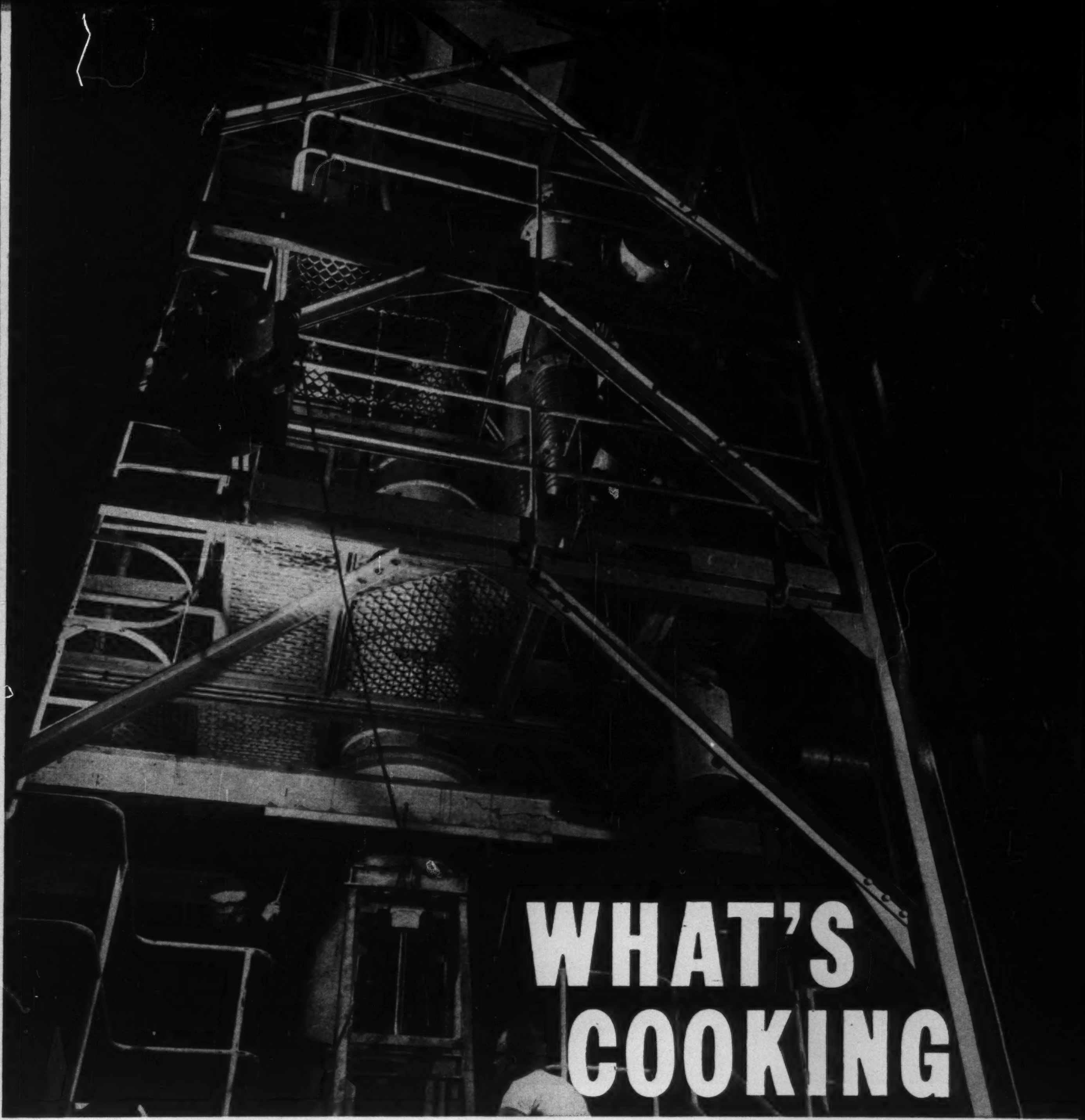
Steel Plate Fabricators Assn.—Annual meeting, Jan. 21-22, Roosevelt Hotel, New Orleans, La. Association headquarters, 105 W. Madison St., Chicago.

Truck Trailers Mfrs. Assn.—Annual convention, Jan. 24-27, Hotel del Coronado, Coronado, Calif. Association headquarters, 710 Albee Bldg., Washington, D. C.

Cutting Tool Mfrs. Assn.—Annual meeting, Jan. 28, Harmonic Club, Detroit. Association headquarters, 416 Penobscott Bldg., Detroit.

Assn. of Steel Distributors, Inc.—Convention, Jan. 30 - Feb. 6, El Mirado Hotel, Palm Springs, Calif. Association headquarters, 29 Broadway, New York 6, N. Y.

American Institute of Electrical Engineers—Winter general meeting, Jan. 31-Feb. 5, Hotel Statler, New York. Institute headquarters, 33 W. 39th St., New York 18, N. Y.



. . . inside Vanadium-Alloys' new CVC furnace?

Amazing new steels. Vacuum-purified steels that approach theoretical limits of strength and temperature resistance. *And* a promise of newer, even stronger steels.

With this huge CVC consumable electrode furnace, Vanadium-Alloys can produce ultra-pure ingots up to 2 feet in diameter. Today's highest vacuum—.0000068 atmospheres—keeps contaminants out. And it's all done with pushbutton electronic controls!

There's a complete line of CVC arc furnaces to meet your vacuum melting needs, from laboratory to volume production.

WRITE for Bulletin 4-25.

Consolidated Vacuum Corporation

ROCHESTER 3, NEW YORK

A SUBSIDIARY OF CONSOLIDATED ELECTRODYNAMICS CORPORATION
(FORMERLY ROCHESTER DIVISION)

the latest word in low cost machining

televersal

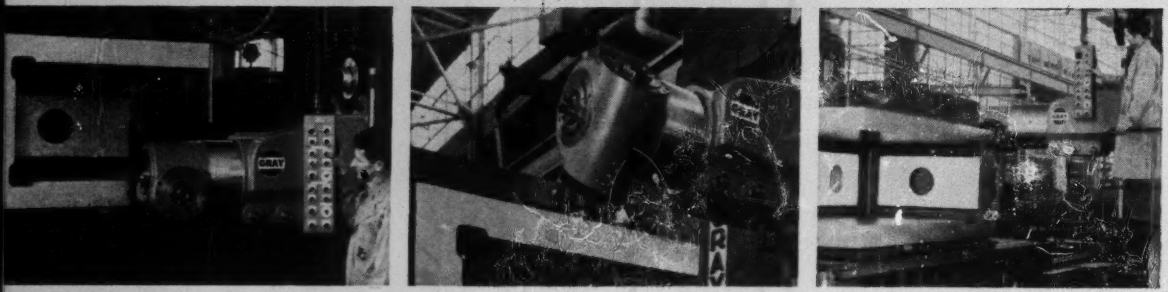
This new GRAY TELEVERSAL head tremendously increases machining range. Conveniently applied, quickly positioned, its great rigidity permits highest horsepower milling cuts.

The large diameter quill may be swiveled to permit any angular cut. A triple-straddle clamp inflexibly locks the quill to the cast pyramid body.

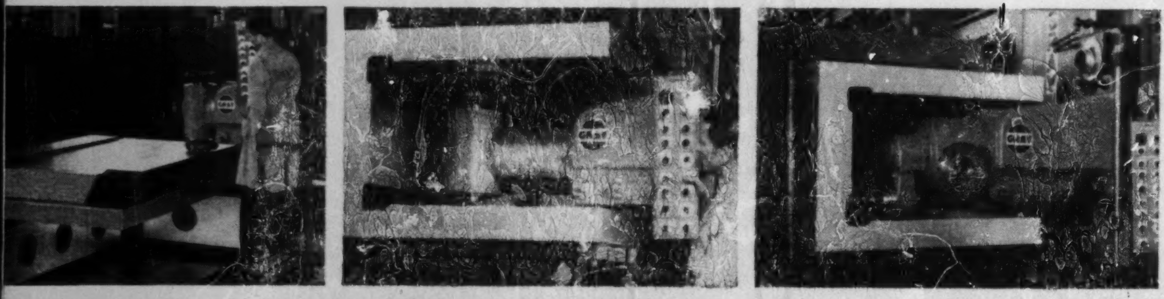
Designed to keep the job low and yet permit great machining range. Ideal when used with column cross travel of the new GRAY horizontal, boring, drilling and milling machine.

Not just an attachment, but a high power massively built, heavy milling unit that offers a new concept in versatility.

The G. A. GRAY Co., Cincinnati, Ohio

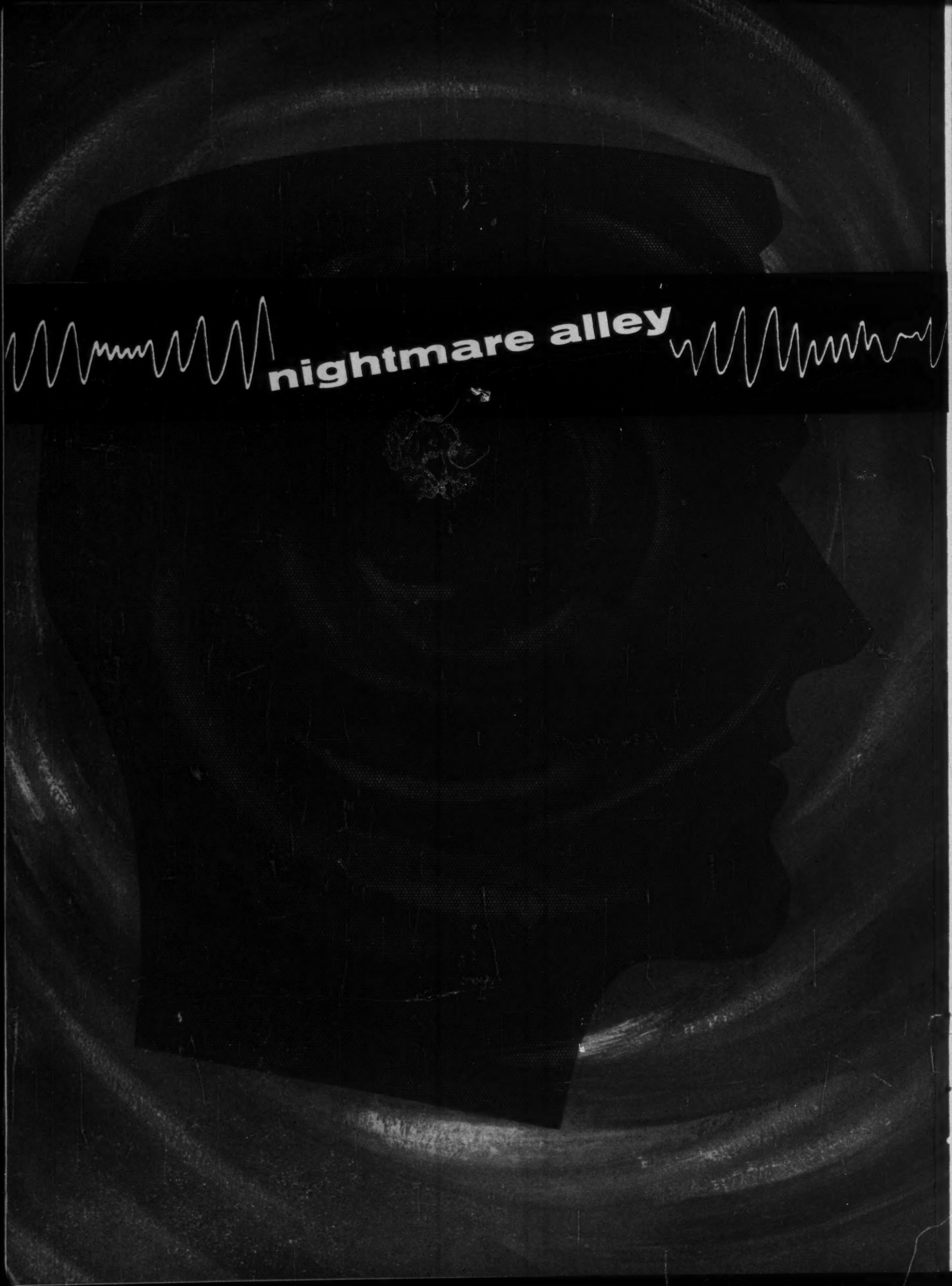


six different surfaces and more . . . and only ONE work-setting



GRAY
GRAY
GRAY
GRAY

nightmare alley



Not knowing what's going to happen next—this is the most upsetting aspect of nightmares . . . and buying and using many stainless steels.

When you order stainless steel from your nearby *Carpenter* SERVICE-CENTER, you know *in advance* what you're getting:

Predictable performance! Every bar, every order, assures you the advantages inherent in maximum uniformity. You hold production and service problems to a minimum. *Carpenter* has taken the guesswork out of stainless.

Large local stocks! Billet, bar or wire . . . your *Carpenter* SERVICE-CENTER has it. We stock an unusually wide range of grades and sizes to accommodate your most diversified needs.

Technical help extraordinary! No matter how difficult your problem, there's an excellent chance that *Carpenter's* continuing Research and Development Program has already produced information to save you time and money. Other progressive companies take advantage of our metallurgical services. Why don't you?

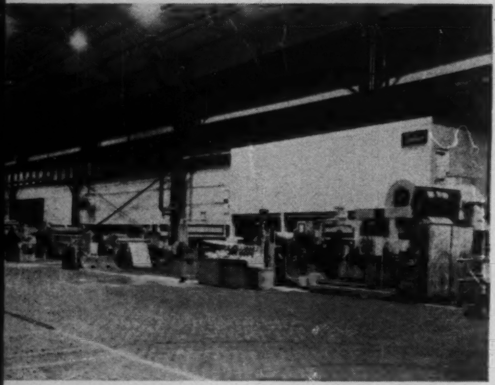
tool and die steels
stainless steels
Carpenter **steel** electronic, magnetic and electrical alloys
high temperature alloys
special-purpose steels
tubing and pipe
fine wire specialties

a new company 70 years old

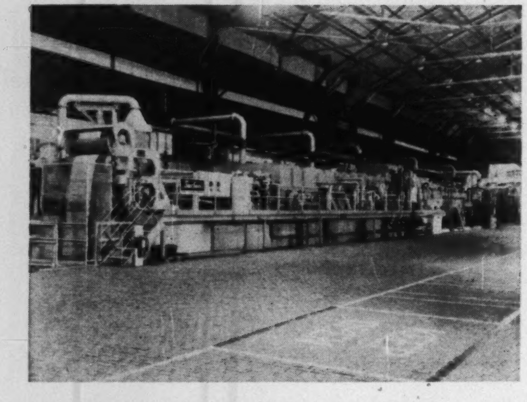
The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.

complete normalizing line:

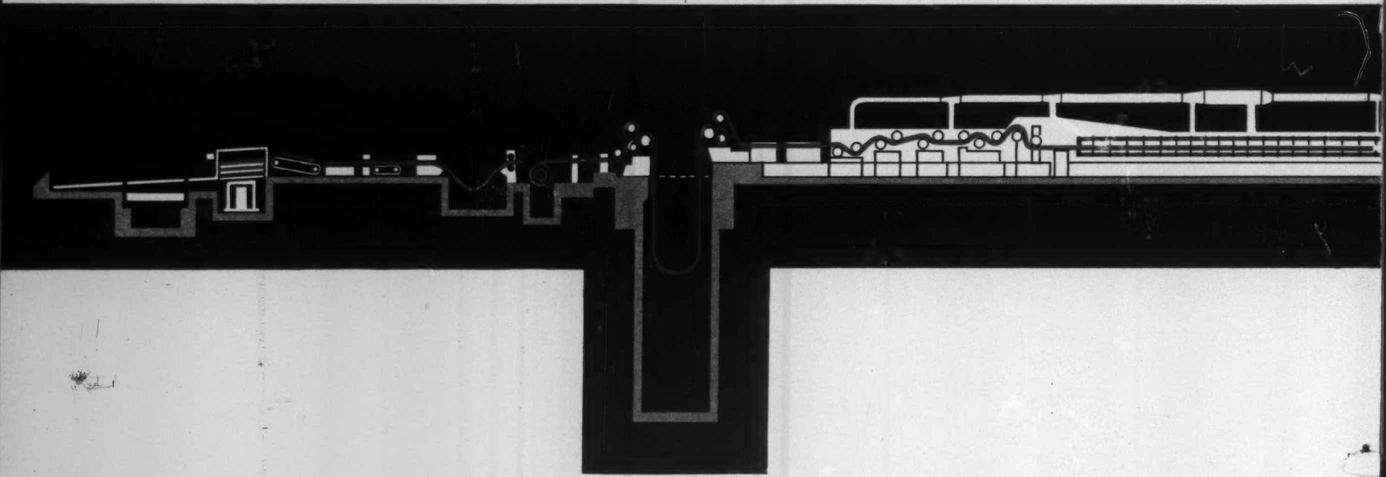
ALL SURFACE!



Exit end of the line, showing looping pit, "recoiler," automatic shear and sheared sheet piler.

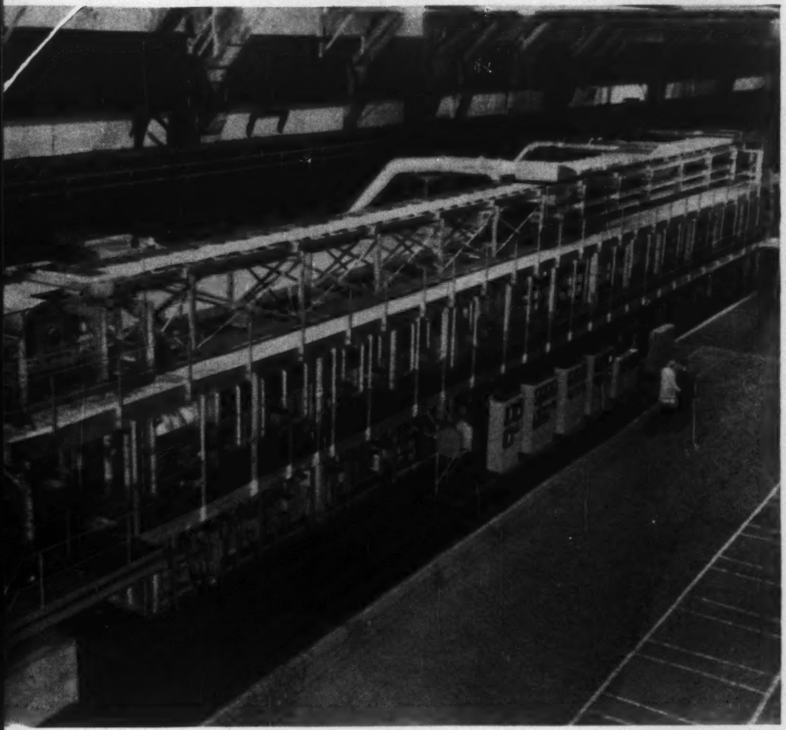


Pickling section includes acid bath, water rinse tank, brush scrubbers, alkali tank and dryer, all installed by Surface. This view shows the exit end of the section.

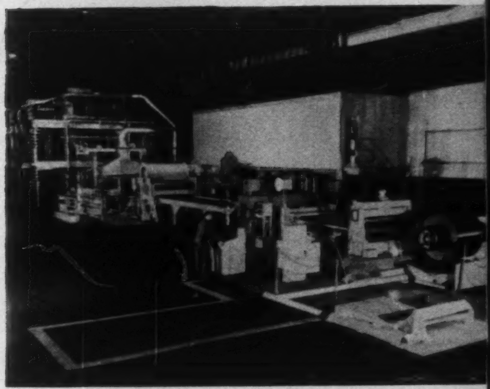


from payoff . . . to payoff

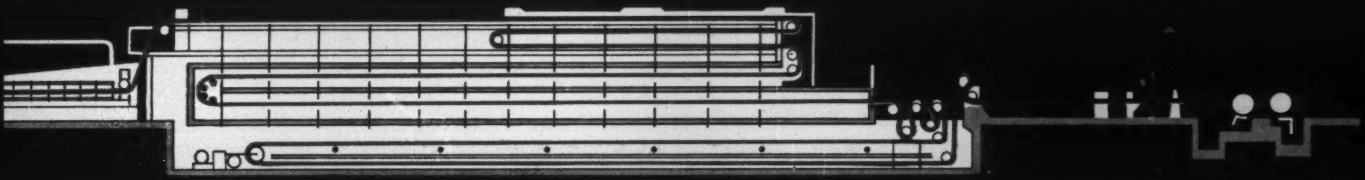
Worldwide engineering and manufacturing facilities through associates in Australia • Belgium • France • Germany • Great Britain • Italy • Japan



Rockwells in the low 40's are achieved consistently in this three-level normalizing furnace. Heating zone is on the lower furnace level; convection cooling in the middle; air blast cooling at the top. A horizontal "looper" is located underneath the furnace.



Payoff reel marks the entry of low carbon stock after cold rolling. Speeds of 150 fpm on 60" wide strip are attained.



This complete new Surface normalizing line for vitreous enamel stock started paying off on its first day of operation. For example, its capacity of 30,000 lbs. an hour puts this mill forcefully into the market for deep draw quality strip. More than adding new selling power, this big line increased productivity per operator by an almost unbelievable amount.

From payoff reel to real payoff, the entire installation is a graphic demonstration of Surface's qualifications as prime contractor. Applying its global experience in metallurgy, combustion, chemistry, and mechanization, Surface engineered and installed the complete line.

Take the opportunity now to evaluate the prime contracting skills available at Surface, and mobilize them for your profit, ***wherever heat is used in industry.***

Surface

SURFACE COMBUSTION *2402 Dorr Street, Toledo 1, Ohio*

A Division of Midland-Ross Corporation

In plate or sheet metalworking . . .

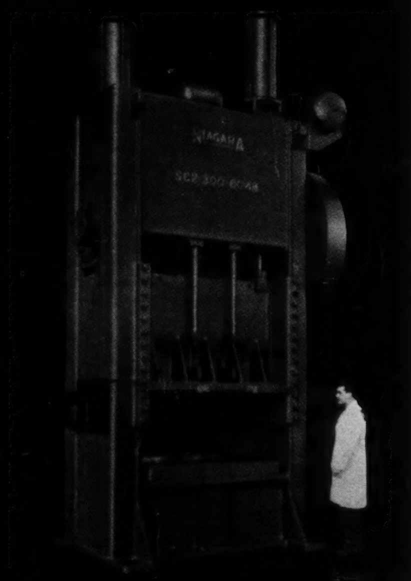
NIAGARA MACHINES CAN

PRESS BRAKES
Mechanical and Hydraulic.
15-1500 ton capacities.

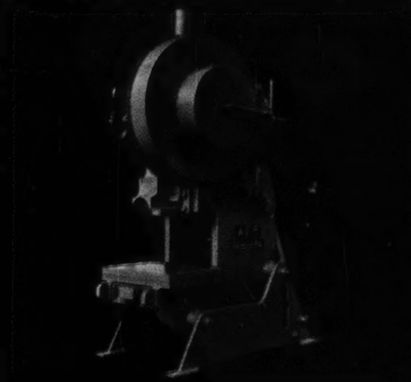
COMBINATION CIRCLE SHEARS AND FLANGERS
High speed machines handling a wide
range of medium to heavy work.

GAP FRAME DOUBLE CRANK PRESSES
3 - 6½ inch shaft diameters.
48 - 222 ton capacities. Also, inclinable series.

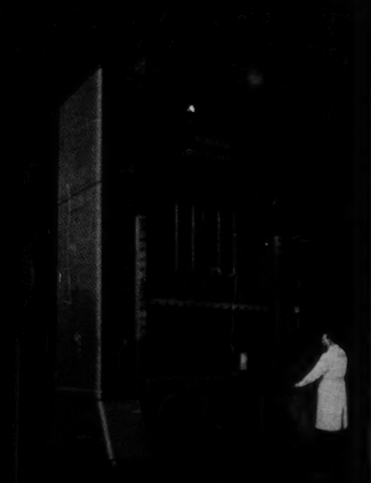
BENDING ROLLS
Hand and power driven for a wide
range of lengths and thicknesses.



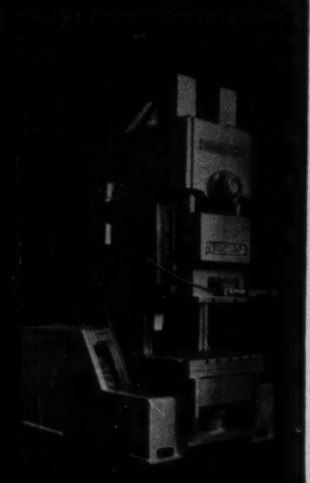
STRAIGHT SIDE SINGLE & DOUBLE CRANK PRESSES
50-500 ton capacities.



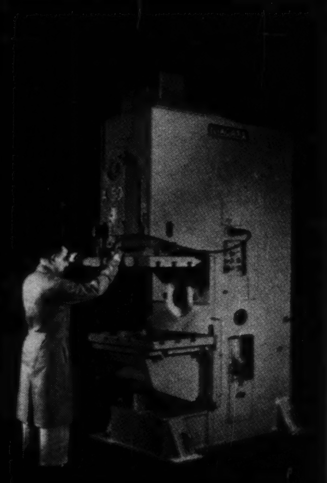
SINGLE CRANK OPEN BACK INCLINABLE PRESSES
1¼ - 7½ inch shaft diameters.
5½-250 ton capacities.



STRAIGHT SIDE ECCENTRIC GEARED PRESSES
One, two, and four-point suspension.
100-1250 ton capacities.
Standard and equipped for automation.



FRONT-TO-BACK CRANKSHAFT
OPEN BACK INCLINABLE PRESSES
Standard and automation models.
45-200 ton capacities.

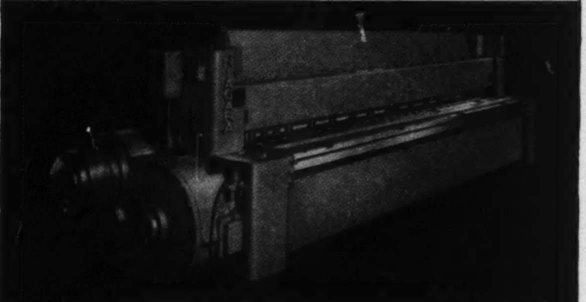


FRONT-TO-BACK CRANKSHAFT
ADJUSTABLE BED PRESSES
Standard and modified models.
22-150 ton capacities.

FRONT-TO-BACK CRANKSHAFT
DEEP THROAT PRESSES
22-150 ton capacities

DO THE MOST* FOR YOU

AUTOMATIC FEED HIGH PRODUCTION PRESSES
60-300 ton capacities.



UNDERDRIVE POWER SQUARING SHEARS
Shim stock to 1 inch capacities in
lengths from 3 - 20 feet.

NIAGARA

America's Most Complete Line of Presses,
Shears, Machines and Tools
for Plate and Sheet Metal Work

POWER PRESSES • PRESS BRAKES • POWER SQUARING SHEARS • ROTARY MACHINES • SLIP ROLL FORMERS • POWER ROTARY SHEARS • DRUM MAKING EQUIPMENT • ELECTRONIC AUTOMATIC WELDERS • GROOVERS AND SEAMERS • HAND OR FOOT OPERATED SHEARS • FOLDERS-BRAKES • LEVER SHEARS AND PUNCHES • HAND TOOLS

* MOST EXTENSIVE LINE:

From giant, power-operated machinery to small hand tools

* MOST ADVANCED DESIGNS:

Years ahead in performance through forward-thinking engineering

In the world's largest automotive and appliance plants or the smallest of sheet metal shops, Niagara machines and tools are usually at work "in force."

Batteries of giant presses are teamed up with speedy ring and circle shears. Massive, rugged press brakes stand side-by-side with powerful bending rolls and squaring shears. Versatile lever punches, rotary machines, groovers and seamers . . . all operate together to produce a better product at lower cost. The Niagara lines are "companion lines" of metalworking machines and tools that work together. A Niagara-equipped shop or plant is years ahead in quality and volume of production.

Whatever you require — power presses or hand tools — Niagara is the line that can do the most for you. It is the most complete in the industry . . . the most advanced in engineering. You can consult a Niagara representative with complete confidence of unbiased recommendations. Niagara has the right machines and tools for your requirements.

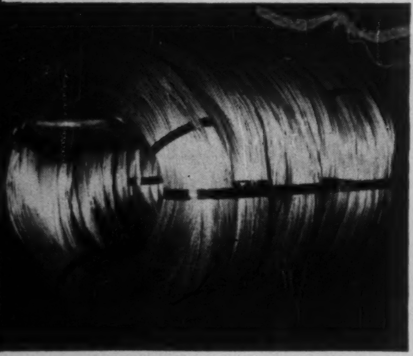
BRING YOUR FILES UP-TO-DATE WITH INFORMATIVE NIAGARA BULLETINS

A diversified and extensive list of machines and tools make up the famous Niagara line. Some of the principal types are illustrated. Be sure that you have the latest data on the ones that apply to your work. At your request, specific Bulletins will be mailed promptly.

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.
DISTRICT OFFICES
Boston • Buffalo • Cleveland • Detroit • Indianapolis • New York • Philadelphia
Distributors in principal U. S. cities and major foreign countries

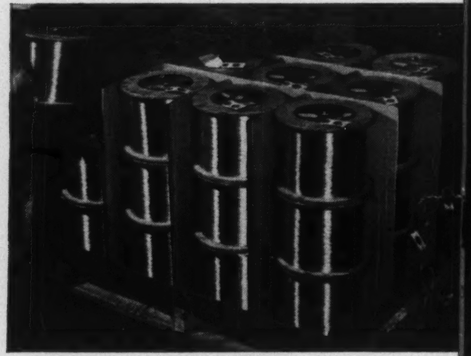
AS&W HEAVY-

Other new AS&W Wire Packages mean important savings in



UNITIZED COILS:
Several regular mill coils bound in one unit to speed up handling and save storage space. Unitized coils carry no price extra!

PAY-OFF DRUMS:
Large, fibre, disposable carton containing long continuous wire coil. Pay-Off Drum is easy to handle and stack, protects wire finish from dirt and corrosive atmospheres.



DISPOSABLE SPOOLS:
Contain up to 65 pounds of fine wire; are shipped on expendable pallets. These non-returnable spools are convenient to handle and stack.

WEIGHT WIRE COILS

save you down time...

handling time...storage space

...at no increase in cost!

If your mill machines are set up to run with these continuous-wire, heavy-duty coils, they will pay off for you in three ways:

They will speed up your production by eliminating unnecessary down time, unnecessary idling of operators and machines.

They will save handling time. One large coil can be handled in a fraction of the time needed to move the same weight in smaller coils.

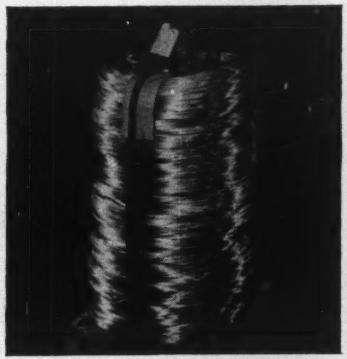
They save storage space. This big coil takes up far less space than the same weight in smaller coils.

And you get all these advantages as standard mill practice. *USS and American are registered trademarks*

USS American Manufacturers Wire

---

time and storage!



PLATFORM COIL CARRIER: This non-returnable unit is made of U-shaped wire frame attached to deck platform, holds up to 3,000 pounds of wire in continuous lengths.

All of these new American Steel & Wire Packages are planned to serve you better, to help you use warehouse space to better advantage, to save time and money.

For more information, get in touch with the nearest district office of American Steel & Wire. General Offices: American Steel & Wire, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

American Steel & Wire
Division of
United States Steel
USS

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

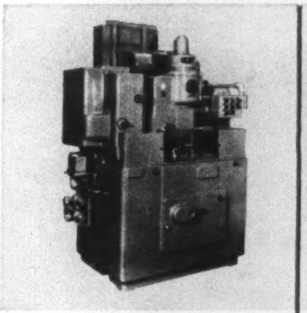
for Every Gear Production Job . . .

Right from the blank to the finished external or internal spur or helical gear, Fellows has the complete line of gear production and inspection equipment to meet all your requirements!

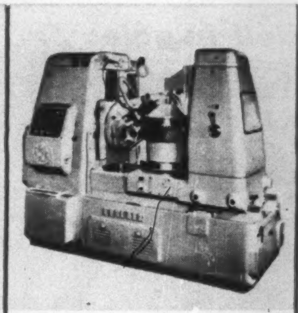
No other builder in the world offers as long and varied a line: Fellows Gear Shapers; Pfauter Gear Hobbers; Fellows-Reishauer Gear Grinding Machines; Fellows Gear Inspection Instruments; Fellows special machines and attachments; Fellows Gear Shaper Cutters. All this, *plus* the benefit of our sixty years of specialized experience in solving gear production problems.

Ask your Fellows representative for information on the complete line of Fellows gear production and inspection equipment. If you have a problem requiring special equipment, ask him to help you solve it, or write direct.

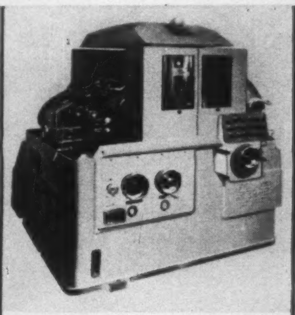
. . . . Fellows Has the Equipment to Shape, Hob, Grind and Inspect



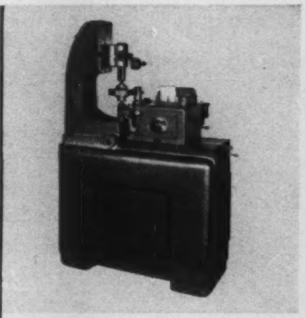
Fellows Gear Shapers cut internal and external spurs and helicals; capacities to 120″ P.D.



Pfauter Gear Hobbing Machines for spur and helical gears; capacities to 120″ P.D.



No. 12 Fellows-Reishauer Gear Grinding Machines grind spurs and helicals to 12″ O.D.

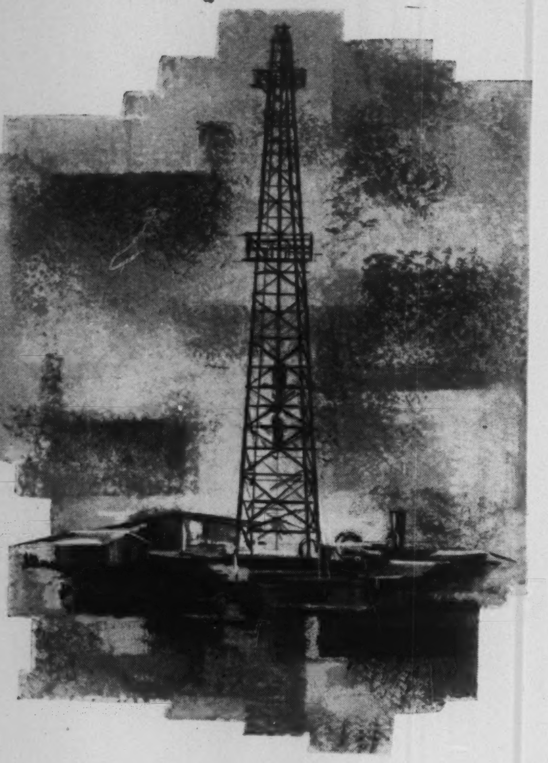


No. 20M Fellows Red Liners make and record the "composite check" of spur and helical gears to 18″ P.D.

THE FELLOWS GEAR SHAPER COMPANY
78 River Street, Springfield, Vermont
Branch Offices:
1048 North Woodward Ave., Royal Oak, Mich.
150 West Pleasant Ave., Maywood, N. J.
5835 West North Avenue, Chicago 39
6214 West Manchester Ave., Los Angeles 45

THE PRECISION LINE **Fellows** *Gear Production Equipment*

New steels are born at Armco



from derricks to doll buggies . . .

Sheffield has the right bolts

Sheffield bolts are vital parts of thousands of manufactured products. They range from automobiles to zipper-making machines. From oil field rigs to toys for tots. The list is next to endless.

In all their many applications, one thing is uniformly true of every Sheffield bolt: it's the best that modern metallurgy, engineering minds and advanced machinery can produce. It's Sheffield-made and quality-controlled from furnace to finished bolt.

From one of the world's largest bolt plants, Sheffield can meet your steel bolt needs—any kind, any quantity—with top quality and quick delivery. Whether it's a standard or special bolt—or one custom-made to your specifications—you'll get the right bolt fast from Sheffield. Just get in touch with your Sheffield Man.

SHEFFIELD

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BOLT PRODUCTS

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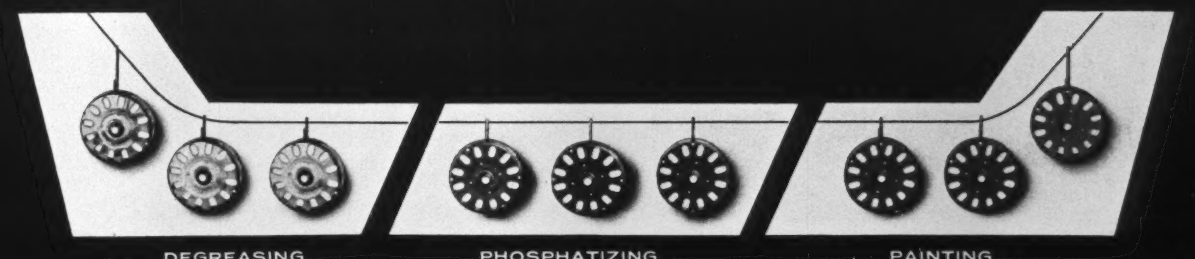
DU PONT
ANNOUNCES

"TRICLENE"
TRICHLORETHYLENE
FINISHING

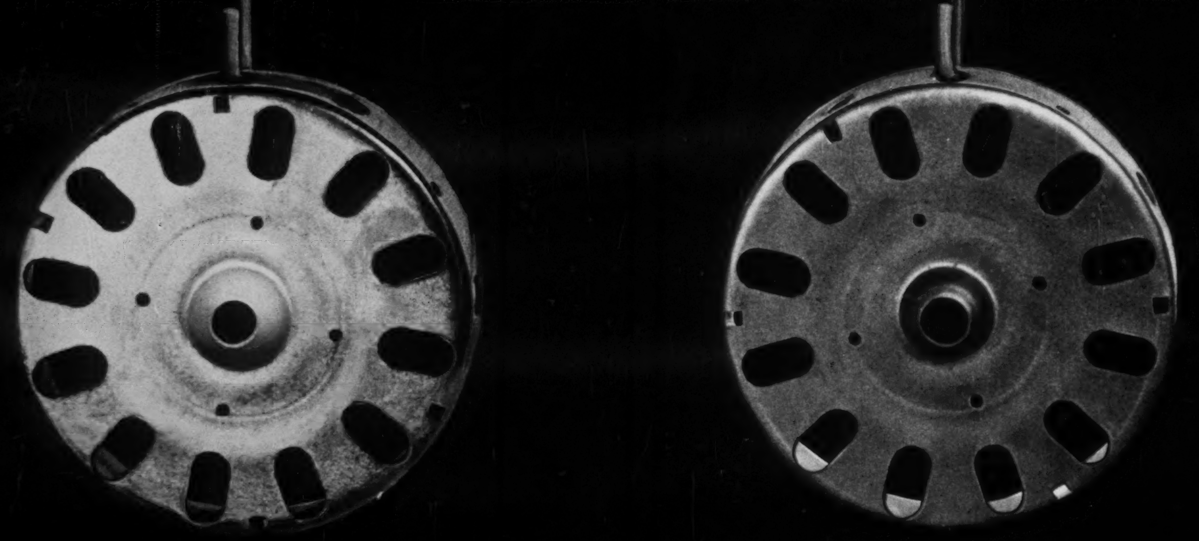

DEGREASING
PHOSPHATIZING
PAINTING

A revolutionary new way to finish metals...
based on Du Pont "Triclene" trichlorethylene

"Triclene" is Du Pont's registered trademark for its trichlorethylene.

Now it is possible to…

CLEAN → PHOSPHATIZE



The production part (shown above) was cleaned, phosphatized and painted in a "Triclene" Finishing unit built by *G. S. Blakeslee & Co.*, Chicago, Ill.

Du Pont "Triclene"® Finishing provides a new, safer way to finish metals—at substantially lower cost!

trichlorethylene

It cuts overall costs

Low Investment—"Triclene" Finishing cuts equipment cost up to 50% below conventional finishing methods. Because it is an anhydrous system, parts emerge from cleaning and phosphatizing steps completely dry; the need for costly drying ovens is eliminated. The "Triclene" Painting step also eliminates drying ovens and drip pans normally required following conventional painting. Fewer steps mean that in-process parts inventory and conveyor length can be reduced up to 55%.

Low Operating Costs—"Triclene" Finishing can cut operating costs up to 30%. Reason: It permits close to 100% recovery of paint overspray and excess solvent for reuse. Because "Triclene" Finishing is an anhydrous system, heat requirements are drastically reduced.

Reduced Plant Space—"Triclene" Finishing can be done in less than ½ the space because fewer steps are required. For example: a conventional wet cleaning, phosphatizing and dip-painting system requiring 1960 square feet of floor space could be replaced with a "Triclene" Finishing System requiring only 695 sq. ft.

It increases safety

Nonflammable—Trichlorethylene is rated by Underwriters' Laboratories as nonflammable at ordinary room temperatures. Thus fire and explosion hazards are minimized. This means greater plant safety, lower insurance rates and reduced investment in fire protection equipment.

It is flexible

The complete Du Pont "Triclene" Finishing System consists of three basic trichlorethylene-based processes: Vapor Degreasing, Phosphatizing and Painting (see booklet). They can be used in various combinations or incorporated singly into your present finishing system. Various dip or spray cycles can be selected for each of the processes. Both large and small finishing operations can utilize "Triclene" Finishing Processes.

For more detailed information please read the enclosed booklet showing examples of three possible "Triclene" Finishing Systems.

PAINT *continuously…*

in a single medium of nonflammable Triclene® trichlorethylene

more information

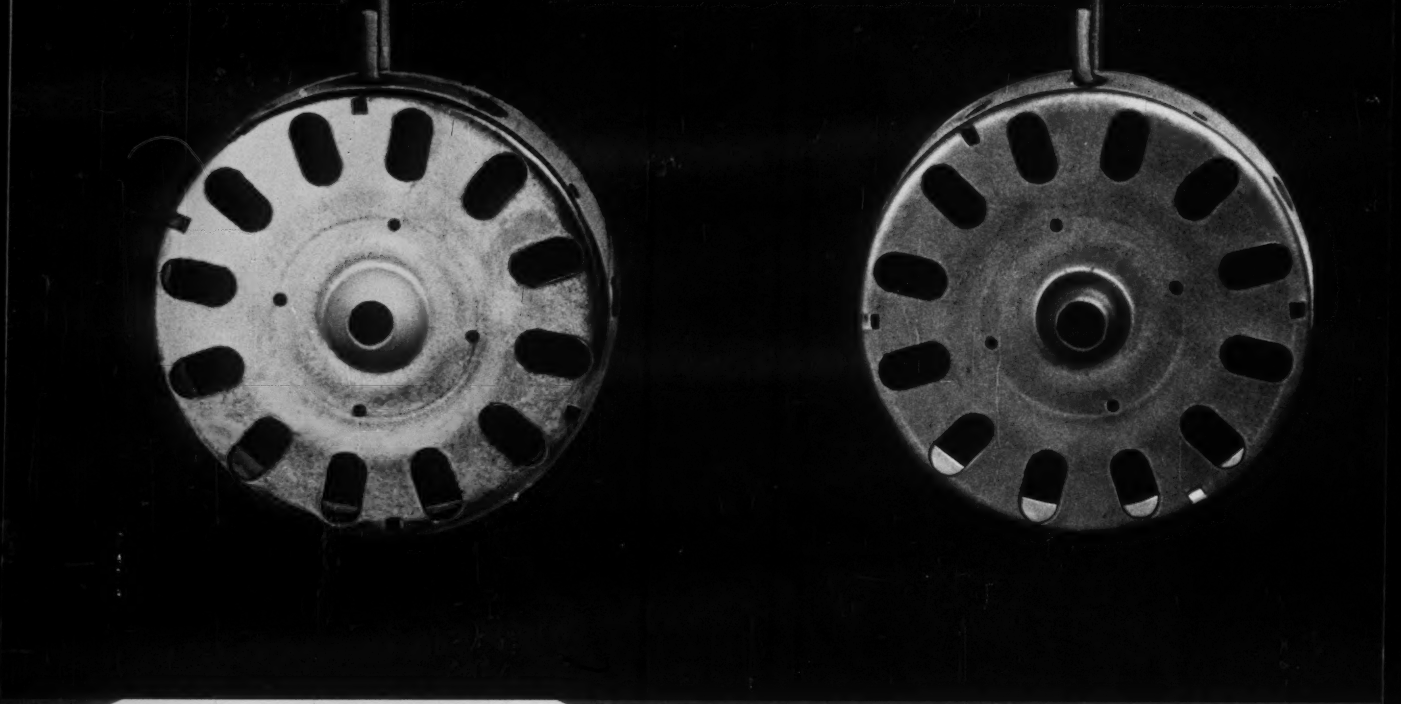
Here are the facts on

3 basic Triclene® Finishing Systems

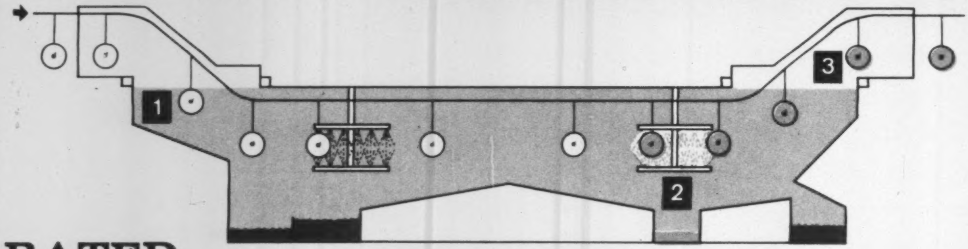
1 *Integrated vapor degreasing and nonflammable painting*
2 *Vapor degreasing and dry phosphatizing*
3 *Vapor degreasing, dry phosphatizing and nonflammable painting*

Now it is possible to . . .

CLEAN → PHOSPHATIZE



Du Pont "Triclene"® Finishing System # 1



INTEGRATED
vapor degreasing and nonflammable painting

The first "Triclene" Finishing System — announced by Du Pont last year — made it possible to integrate cleaning and painting in one compact unit.

HERE'S HOW IT WORKS:

1. A soiled metal part enters the degreasing section of the unit (above) where it is quickly and thoroughly cleaned by trichlorethylene vapor-spray-vapor degreasing.

2. The part moves into the painting section where a new type of industrial paint, thinned solely with nonflammable "Triclene" Paint Grade trichlorethylene, is applied. Spray-In-Vapor method is illustrated; dip painting is also available.

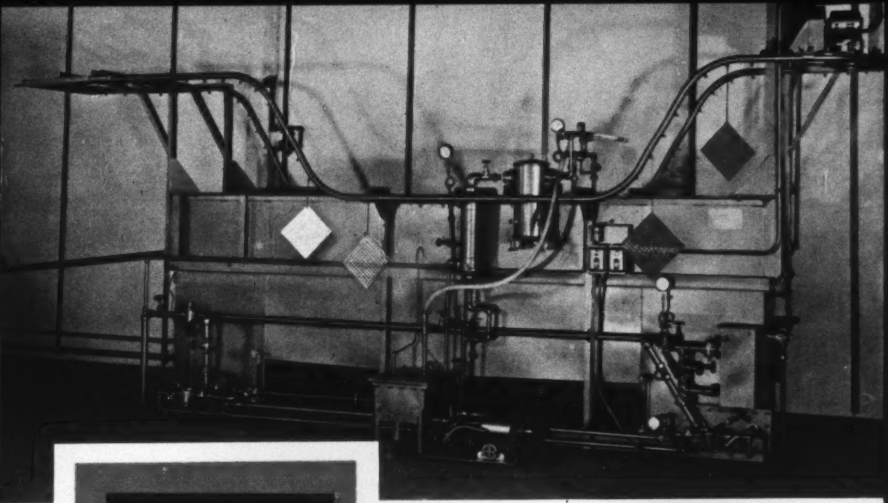
3. The hot, painted part emerges from the unit. Excess solvent quickly evaporates, leaving part completely dry (when lacquers are used), or ready for a short baking step (when curing paints are used).

ADVANTAGES—Integration of cleaning and painting in a single unit drastically reduces equipment size; does away with drip pans; and eliminates the need for a dry-off oven. It also permits close to 100% recovery of paint over-spray and excess solvent for reuse. The amount of "Triclene" solvent recovered from the painting phase will often be enough to run the entire degreasing operation! Nonflammability means greater plant safety, lower insurance rates and less investment for fire protection equipment. These advantages result in substantial cost savings as shown in the comparison at right.

PRESENT STAGE OF DEVELOPMENT—The "Triclene" vapor degreasing and painting system is ready now for general commercial use. A variety of high-quality industrial paints based on "Triclene" trichlorethylene is available. Arrangements can be made to test-paint your parts in demonstration units. (See postcard on back cover.)

PAINT *continuously…*

in a single medium of nonflammable Triclene® trichlorethylene



Demonstration unit for Degreasing/Spray-In-Vapor Painting now in operation at G. S. Blakeslee & Co., Chicago.

This "Lawn King" lawn-spreader is now being dip painted commercially using an air-dry "Triclene" thinned paint.

QUALITY OF WORK—Production experience shows excellent appearance and uniformity of film thickness—even on complex parts. Generally, results are equivalent or superior to those obtainable with conventional dip or flow-coat processes.

COMPARE
TOTAL COSTS

EXAMPLE:

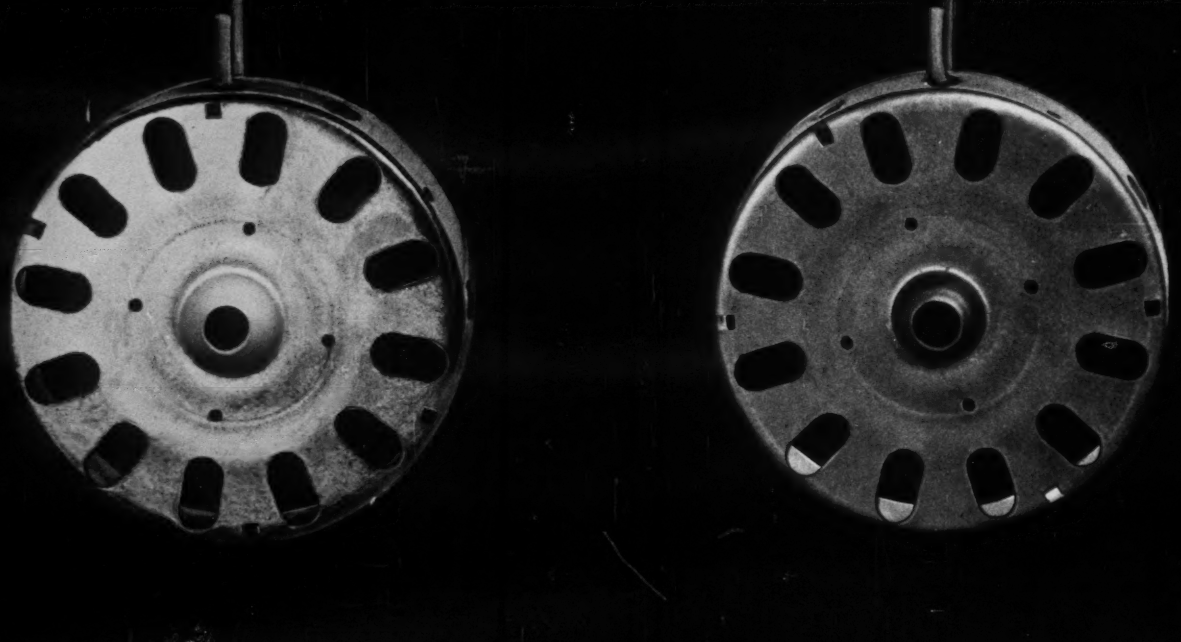
Work: Steel Shelves
Area Painted: 4,200 sq.ft./hr.

CONVENTIONAL METHOD	"TRICLENE" FINISHING
Alkali washing, dip painting, oven drying steps.	Integrated "Triclene" Degreasing and Spray-In-Vapor Painting System.
Total Finishing Cost $48.40/hr	**Total Finishing Cost** $38.00/hr
Total Investment Cost $169,000 (Approx. Equipment Cost—$61,000)	**Total Investment Cost** $94,000 (Approx. Equipment Cost—$30,000)
Total Operating Area, Sq. Ft. 1,640	**Total Operating Area, Sq. Ft.** 480

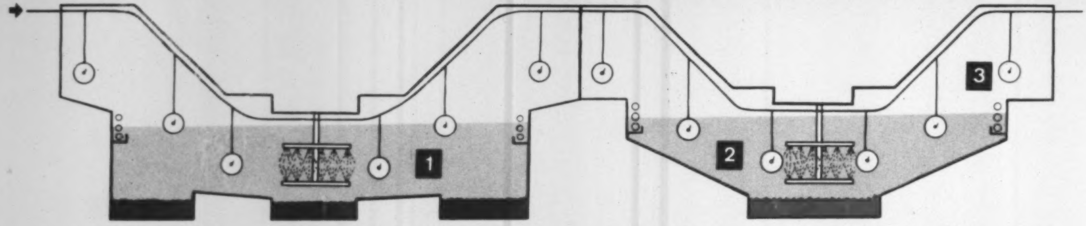
If you're planning to expand or modernize your operation, consider all of the advantages of a "Triclene" Cleaning and Painting System. Du Pont will be glad to help you make a comparative Cost Analysis and to evaluate "Triclene" Finishing for your needs. Fill out postcard on the back page.

Now it is possible to . . .

CLEAN → PHOSPHATIZE



Du Pont "Triclene"® Finishing System #2



Vapor degreasing and phosphatizing

PRESENT STAGE OF DEVELOPMENT—
After years of research, Du Pont has developed a new anhydrous phosphatizing method based on trichlorethylene. This recently announced development now makes possible linking of the "Triclene" Degreasing and Painting Processes with a compatible anhydrous phosphatizing process.

Although there are two successful full-scale test installations now in operation, "Triclene" Phosphatizing will not be commercially available until mid-1960. This will permit Du Pont to complete extensive field testing of the process. Those who wish to explore the possibility of participation in the field test program, or who wish to plan for future modernization, can evaluate "Triclene" Phosphatizing now.

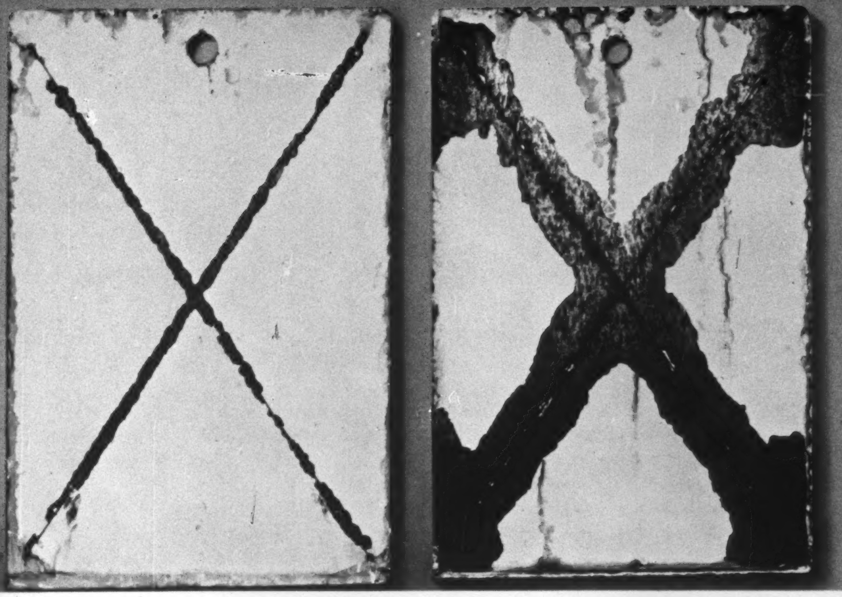
This "Triclene" System combines vapor degreasing and dry phosphatizing; requires just two compact units.

HERE'S HOW IT WORKS: A soiled metal part enters the two-stage system (No. 1 above) where it is thoroughly cleaned by trichlorethylene vapor-spray-vapor degreasing. The part then enters the phosphatizing stage (2) where it is treated in the anhydrous phosphatizing composition. When the phosphatized part emerges from the trichlorethylene vapor (3) the solvent evaporates and the part is completely dry and ready for "Triclene" Painting, conventional painting, or in-plant storage or shipping.

ADVANTAGES—Anhydrous "Triclene" Degreasing/Phosphatizing takes as little as one-half the time and space of conventional wet systems. Heat requirements are reduced sharply and no dry-off step is needed prior to painting. These advantages result in substantial cost savings as shown in the comparison at right.

→PAINT *continuously…*

in a single medium of nonflammable Triclene® trichlorethylene



Standard salt-spray exposure test shows quality of "Triclene" phosphatizing: The steel panel on the left was cleaned and phosphatized in a "Triclene" Finishing System and compared with unphosphatized-painted steel after standard salt-spray exposure for 600 hours. As indicated by the minimum corrosion at the scribe mark, the "Triclene" Phosphatized panel shows significantly improved finish performance.

QUALITY OF WORK—"Triclene" Phosphatizing produces an adherent phosphate conversion coating with improved corrosion resistance. In addition, the phosphate coating alone is remarkably resistant to rusting. This unique property benefits the steel fabricator who wishes to store or ship his parts prior to painting.

COMPARE
TOTAL COSTS

EXAMPLE:

Work: Steel Shelves
Area Painted: 4,200 sq.ft./hr.

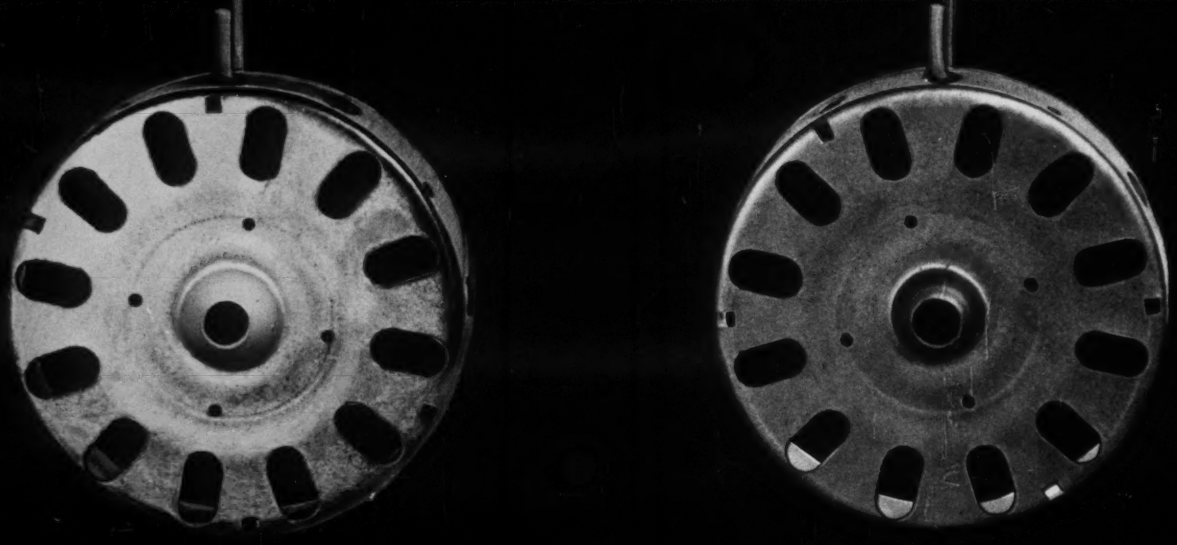
CONVENTIONAL METHOD	"TRICLENE" FINISHING
Alkali washing, "wet" phosphatizing, oven drying steps.	"Triclene" Degreasing / Phosphatizing System.
Total Cleaning/ Phosphatizing Cost.... **$12.00/hr**	Total Cleaning/ Phosphatizing Cost **$8.30/hr**
Total Investment Cost ...... **$73,600** (Approx. Equipment Cost—$33,000)	Total Investment Cost ...... **$45,500*** (Approx. Equipment Cost—$27,000)
Total Operating Area, Sq. Ft. **760**	Total Operating Area, Sq. Ft. **456**

*The relative cost advantage for the high-production system illustrated is also attainable with smaller operations.

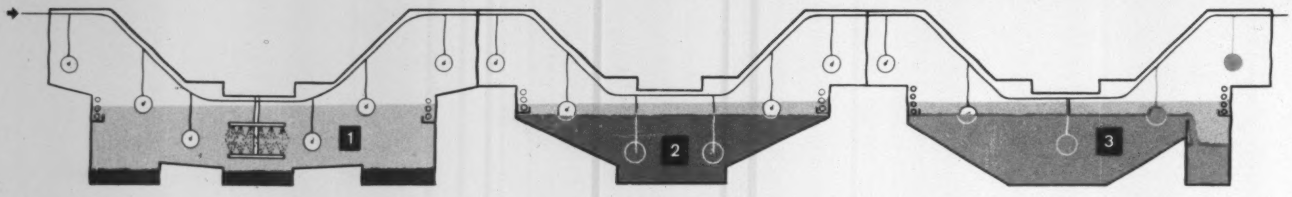
If you're planning to expand or modernize your operation, Du Pont will be glad to help you make a comparative Cost Analysis and to evaluate "Triclene" Degreasing and Phosphatizing for your needs. Fill out postcard on the back page.

Now it is possible to . . .

CLEAN → PHOSPHATIZE



Du Pont "Triclene"® Finishing System #3



Vapor degreasing, phosphatizing* and painting

This is the complete "Triclene" Metal Finishing System—the ultimate in processing efficiency.

HERE'S HOW IT WORKS: A soiled metal part enters this three-stage unit (above) and is: (1) thoroughly cleaned by trichlorethylene vapor-spray-vapor degreasing . . . (2) phosphatized during one short immersion in the phosphatizing solution . . . (3) dip painted with "Triclene" Paint Grade trichlorethylene thinned paint. Finished part emerges from the unit completely dry when lacquer is used or ready for a short baking step in the case of curing paints. (Spray-In-Vapor painting, not shown, is available.)

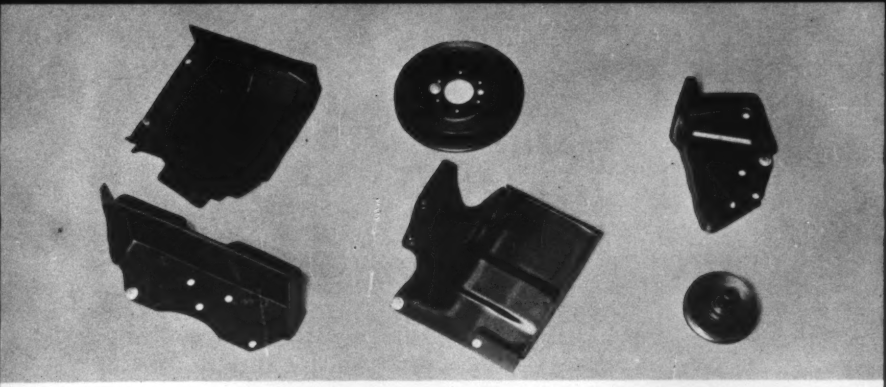
ADVANTAGES—The complete Du Pont "Triclene" Finishing System consists of three compact steps. (If baking enamels are used, a fourth but shortened baking step is required.) Conventional systems take up to 12 steps to do the same job. Nonflammable "Triclene" Finishing cuts insurance and fire protection costs—safeguards plant investment. The lower equipment costs and heat and floor space requirements all result in appreciable savings, as shown in the cost comparison at right.

QUALITY OF WORK—Combining the "Triclene" Processes into one complete system produces a finish which exhibits improved adhesion and corrosion resistance, and excellent appearance.

**Present Stage of Development:* Although a large automotive manufacturer is now using the complete "Triclene" Finishing System, the phosphatizing stage will not be available for wide commercial use until mid-1960. This will permit Du Pont to complete field trials on the "Triclene" Phosphatizing Process. Those who wish to explore the possibility of participation in the Field Test Program, or who are planning future modernization, can evaluate "Triclene" Phosphatizing now. (Fill out postcard on back page.) As stated previously, "Triclene" Degreasing and Painting are commercially available now.

PAINT *continuously…*

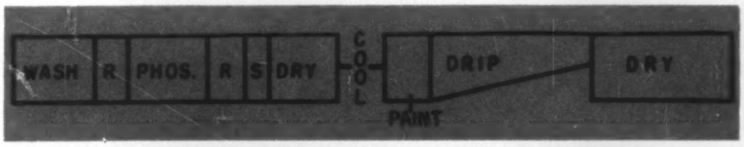
in a single medium of nonflammable Triclene® trichlorethylene



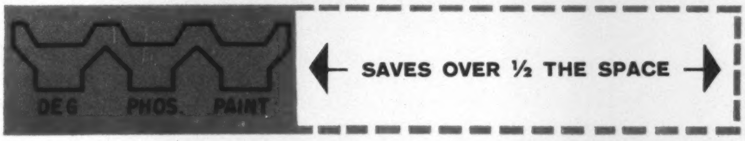
• These automobile engine production parts were vapor degreased, phosphatized and painted in a "Triclene" System similar to the one diagramed at left.

Compare Operating Areas

CONVENTIONAL METHOD requires 1,960 sq. ft.



"TRICLENE" FINISHING requires 695 sq. ft.



COMPARE
TOTAL COSTS

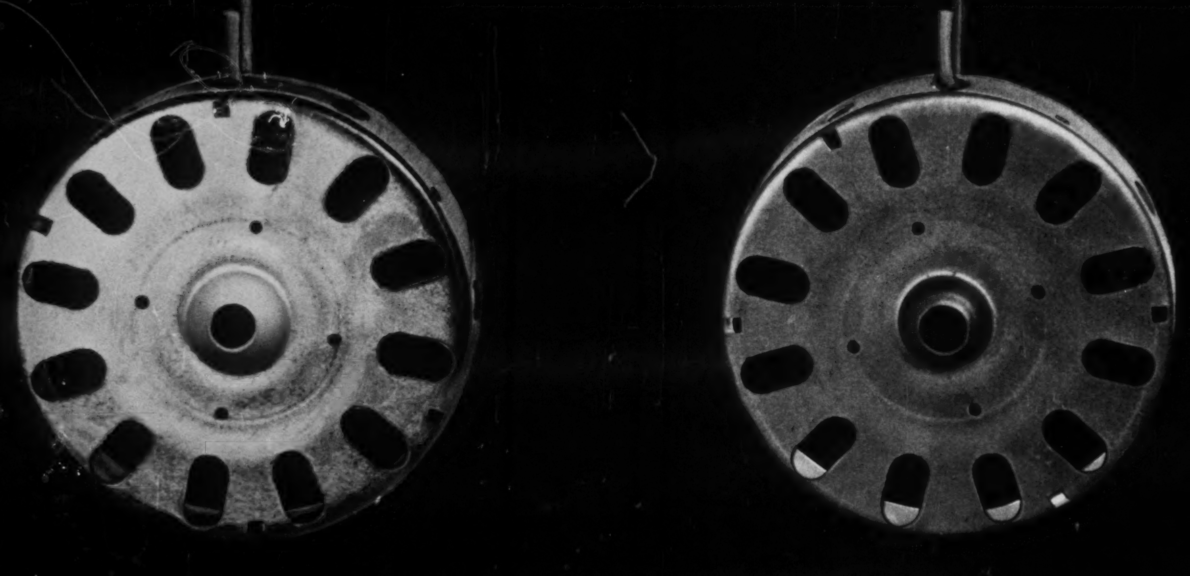
EXAMPLE:

Work: Steel Shelves
Area Painted: 4,200 sq.ft./hr.

CONVENTIONAL METHOD	"TRICLENE" FINISHING
Alkali washing, wet phosphatizing, dip painting, oven-drying steps.	Vapor degreasing, phosphatizing, painting.
Total Finishing Cost.... **$54.30/hr**	Total Finishing Cost.... **$41.70/hr**
Total Investment Cost .... **$200,000** (Approx. Equipment Cost—$73,000)	Total Investment Cost .... **$122,000** (Approx. Equipment Cost—$42,000)
Total Operating Area, Sq. Ft. **1,960**	Total Operating Area, Sq. Ft. **695**

If you're planning to expand or modernize your operation, consider all of the advantages of a complete "Triclene" Finishing System. Du Pont will be glad to help you make a comparative Cost Analysis and to evaluate "Triclene" Finishing for your needs. Fill out postcard on the back page.

CLEAN → PHOSPHATIZE



Here's what to do if you are interested in evaluating "TRICLENE"® FINISHING for your operation

Fill out and return the postcard at right. If you indicate a general interest, Du Pont will mail you technical literature describing the processes; if you indicate a specific or immediate need for evaluation, Du Pont will initiate the following evaluation program:

1 Finishing Analysis

Du Pont will provide you with detailed process literature and a Finishing Data Sheet which, when filled out by you, will give Du Pont the information needed to answer these three important questions:

1. *Will "Triclene" Finishing maintain or improve your quality standards?*
2. *Is "Triclene" Finishing mechanically applicable in your particular case?*
3. *What cost advantage can you expect to realize from adoption of a "Triclene" Finishing System?*

Preliminary answers to these questions will be presented in a complete *Finishing Analysis* which will include estimates of equipment size and cost plus a confidential "High-Spot" finishing cost comparison of the recommended "Triclene" System with the equivalent conventional system.

→ PAINT *continuously…*

in a single medium of nonflammable Triclene® trichlorethylene

2 Product Evaluation and Equipment design

If Du Pont's Finishing Analysis shows that a "Triclene" Finishing System appears applicable to your particular operation, Du Pont will then make arrangements to supply you with panels and parts necessary for you to evaluate the finish produced by the "Triclene" System. Du Pont will then work with the paint and equipment manufacturers to translate laboratory-scale results into a well-designed full-scale system.

3 Help in Start-up

When you install equipment for "Triclene" Finishing you can count on Du Pont assistance through the important start-up period. Du Pont will work with you and your paint and equipment suppliers—will be glad to advise on installation, start-up and operating procedures.

4 Follow-through Service

You can obtain continuing Du Pont service after your "Triclene" System is in operation. A trained Du Pont representative will check with you regularly . . . and will be available when you need technical help.

Fill out this card and mail to Du Pont ➡

I'm interested in evaluating DuPont "Triclene" Finishing for

☐ **CLEANING** ☐ **PHOSPHATIZING** ☐ **PAINTING**

☐ I would like technical literature describing these processes.

☐ Our Company would consider replacement of existing equipment if we can be shown economic justification. Please send me your Finishing Data Sheet.

☐ We have an immediate need for new finishing equipment to be installed by________________ (target date) Please have your representative contact me.

Please fill out completely:

Describe parts you finish________________

Type of process you now use for:

☐ Metal cleaning________________

☐ Phosphatizing________________

☐ Painting________________

Name________________

Position________________

Firm________________

Address________________

City________ Zone____ State________

Du Pont makes two trichlorethylene products for use in "Triclene" vapor degreasing and painting

1. **"Triclene" D Metal Degreasing Grade** trichlorethylene—long recognized as the "standard of the industry". Its consistent high quality means top performance under all operating conditions. Reason: an exclusive combination of neutral stabilizers that resist deteriorating influences, thus assuring longer solvent life. "Triclene" D leaves parts bright and clean, free from deposits, staining, etching; keeps degreaser coils free of sludge; reduces costly downtime and maintenance. "Triclene" D is easily recoverable for reuse.

2. **"Triclene" Paint Grade** trichlorethylene was especially developed to serve as the thinner for a new class of industrial paints for use in Du Pont's "Triclene" Painting Processes. This special grade of nonflammable trichlorethylene contains a new (neutral) stabilizer formulation which minimizes gelation at process temperature and avoids discoloration of the lightest paint shades. At the same time it maintains the same high standard of stability for which Du Pont's degreasing grade trichlorethylene is well known and can be recovered for reuse in degreasing operations.

NOTE: Du Pont's "Triclene" Phosphatizing Grade trichlorethylene, which is now under field test, will be commercially available in mid-1960 when the phosphatizing process will be ready for general use.

Metal degreasing and paint grades of "Triclene" trichlorethylene are available now from any of these Du Pont distributors:

ARIZONA
Western Chemical & Mfg. Co.

CALIFORNIA
Atlas Mfg. & Chem. Co.
Baron Industries
L. H. Butcher Co.
Currier Company
Hanson-Van Winkle-Munning Co.
Chas. F. L'Hommedieu & Sons Co.
Los Angeles Chemical Co.
Reese Supply Co., Inc.
Western Chemical & Mfg. Co.

COLORADO
Braun-Knecht-Heimann Co.

CONNECTICUT
Crane Equipment & Supply Co.
Enthone, Inc.
Hubbard-Hall Chem. Co.
Mac Dermid, Inc.

FLORIDA
Biscayne Chem. Labs, Inc.
Lenfesty Supply Co.

GEORGIA
McKesson & Robbins, Inc.

ILLINOIS
Central Solvents & Chems. Co.
Dico Co., Ltd.
Industrial Oil & Chem. Co.
McKesson & Robbins, Inc.
The Udylite Corp.

INDIANA
Hoosier Solvents & Chemicals Corp.
Wm. Lynn Chemical Co., Inc.
Stevens Co.

IOWA
Dico Corp., Ltd.
Kennedy & Parsons Co.
McKesson & Robbins, Inc.

KANSAS
McKesson & Robbins, Inc.

KENTUCKY
Dixie Solvents & Chemicals Co.

LOUISIANA
Southern Solvents & Chemicals Co.

MASSACHUSETTS
Borden & Remington Co.
Chemical Sales & Service Co., Inc.
Doe & Ingalls
Eastern Chemicals, Inc.
Hamblet & Hayes Co.
Howe & French, Inc.
McKesson & Robbins, Inc.
Textile Aniline & Chem. Co.
Worcester Chemical Distributors, Inc.

MICHIGAN
Carrier-Stephens Co.
Eaton Chemical & Dyestuff Co.
Ecclestone Chemical Co., Inc.
Hanson-Van Winkle-Munning Co.
The Udylite Corp.
Western Solvents & Chemicals Co.
Wolverine Solvents & Chemicals Co.

MINNESOTA
W. D. Forbes Co.
Lyon Chemical Co., Inc.
McKesson & Robbins, Inc.
Worum Chemical Co.

MISSOURI
Jenkins-Guerin, Inc.
Missouri Solvents & Chemicals Co.

NEBRASKA
McKesson & Robbins, Inc.

NEW HAMPSHIRE
New England Chemical Supply Co.

NEW JERSEY
Brown Chemical Co.
Chemical Solvents, Inc.
Dooner & Smith Chemical Co.
McKesson & Robbins, Inc.

NEW YORK
Buffalo Solvents & Chem. Corp.
Duso Chemical Co., Inc.
Eastern Chemicals, Inc.
Empire Electroplating Supply Co.
Enequist Chemical Co.
McKesson & Robbins, Inc.
Riverside Chemical Co., Inc.
The Udylite Corp.
West Side Corp.

OHIO
Amsco Solvents & Chemicals Co.
The Bison Corp.
Wm. Buchanan Supply Co.
Farley Chemical & Solvents Co.
Industrial Chemical Products Co.
Ohio Solvents & Chemicals Co.
Pol-O-Plate Products
Superior Chemical Products Co.
Thomson Chemical Co.
Toledo Solvents & Chemicals Co.
The Udylite Corp.

OREGON
L. H. Butcher Co.

PENNSYLVANIA
Belco Supplies, Inc.
Carman-Pittsburgh
Chemclene Corp.
Fort Pitt Chemical Co.
Industrial Solvents & Chemicals Co.
McKesson & Robbins, Inc.
Merchants Products Corp.
George A. Rowley Co., Inc.
Textile Chemical Co.
The Udylite Corp.

RHODE ISLAND
American Chemical Works
Borden & Remington Co.
Brian Supply Co.
Conley & Straight, Inc.
John D. Lewis, Inc.

TENNESSEE
Burkart-Schier Chemical Co.
Ideal Chemical & Supply Co.

TEXAS
Texas Solvents & Chemicals Co.

UTAH
L. H. Butcher Co.

VIRGINIA
Phipps & Bird, Inc.

WASHINGTON
L. H. Butcher Co.

WEST VIRGINIA
Pennsylvania & W. Virginia Supply Corp.
W. T. Rife & Co., Inc.

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Donald Sales & Mfg. Co.
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TRICHLORETHYLENE

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

PRINTED IN U.S.A.

A-12443

HYATT U.S.A.
HYATT U.S.A.

YOU GET BIGGER SHAFTS IN THE SAME SPACE
WHEN YOUR "SPECS" READ HYATT

To gain more space, simply eliminate the separable race from a Hyatt Hy-Roll bearing. For Hyatt rollers will operate directly on any shaft or bore that you've hardened and ground to bearing specifications. But, first be sure you're using Hy-Roll bearings. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

Replacement bearings available through United Motors System and its authorized bearing distributors.

HYATT *HY-ROLL BEARINGS*

IN ROLLER BEARINGS HYATT IS THE WORD FOR GM GENERAL MOTORS RELIABILITY

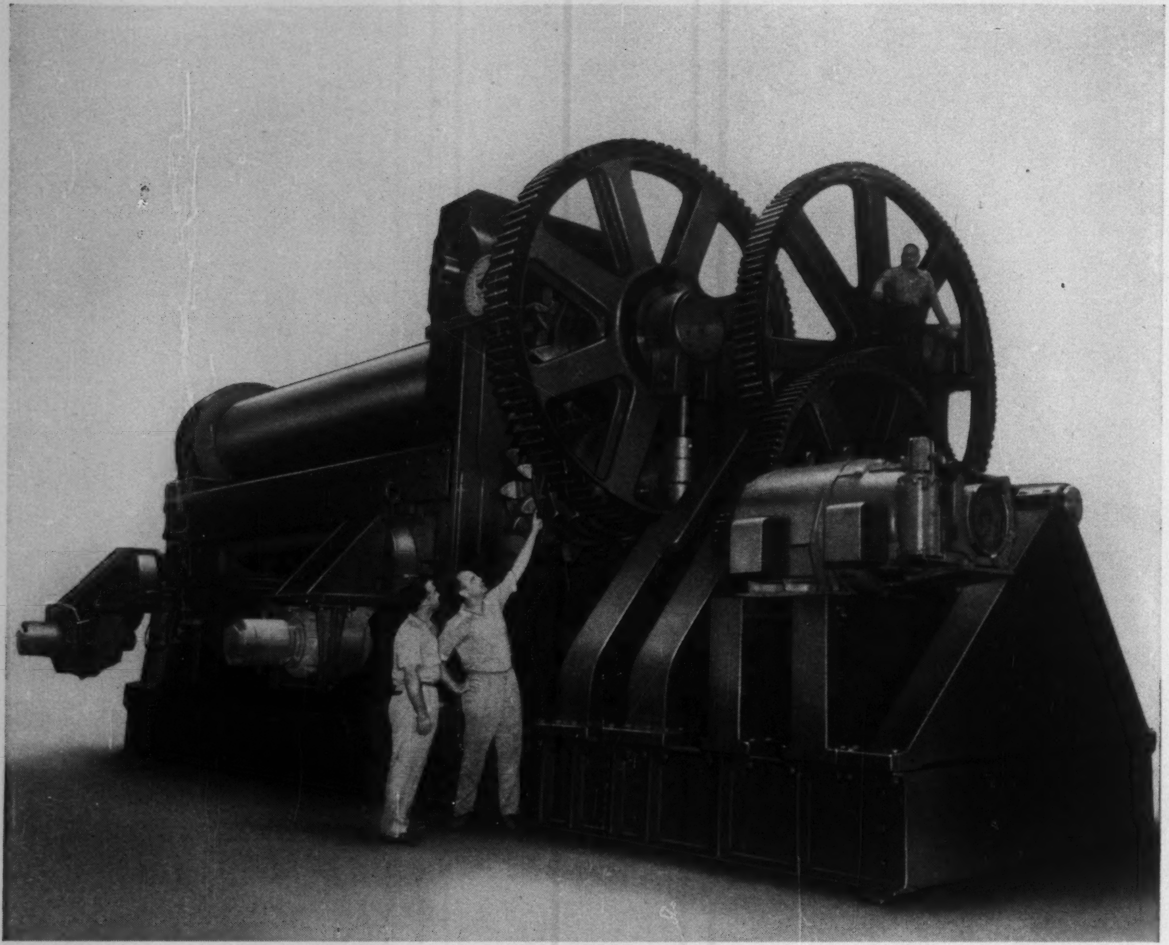


PLATE BENDING ROLLS INITIAL PINCH TYPE

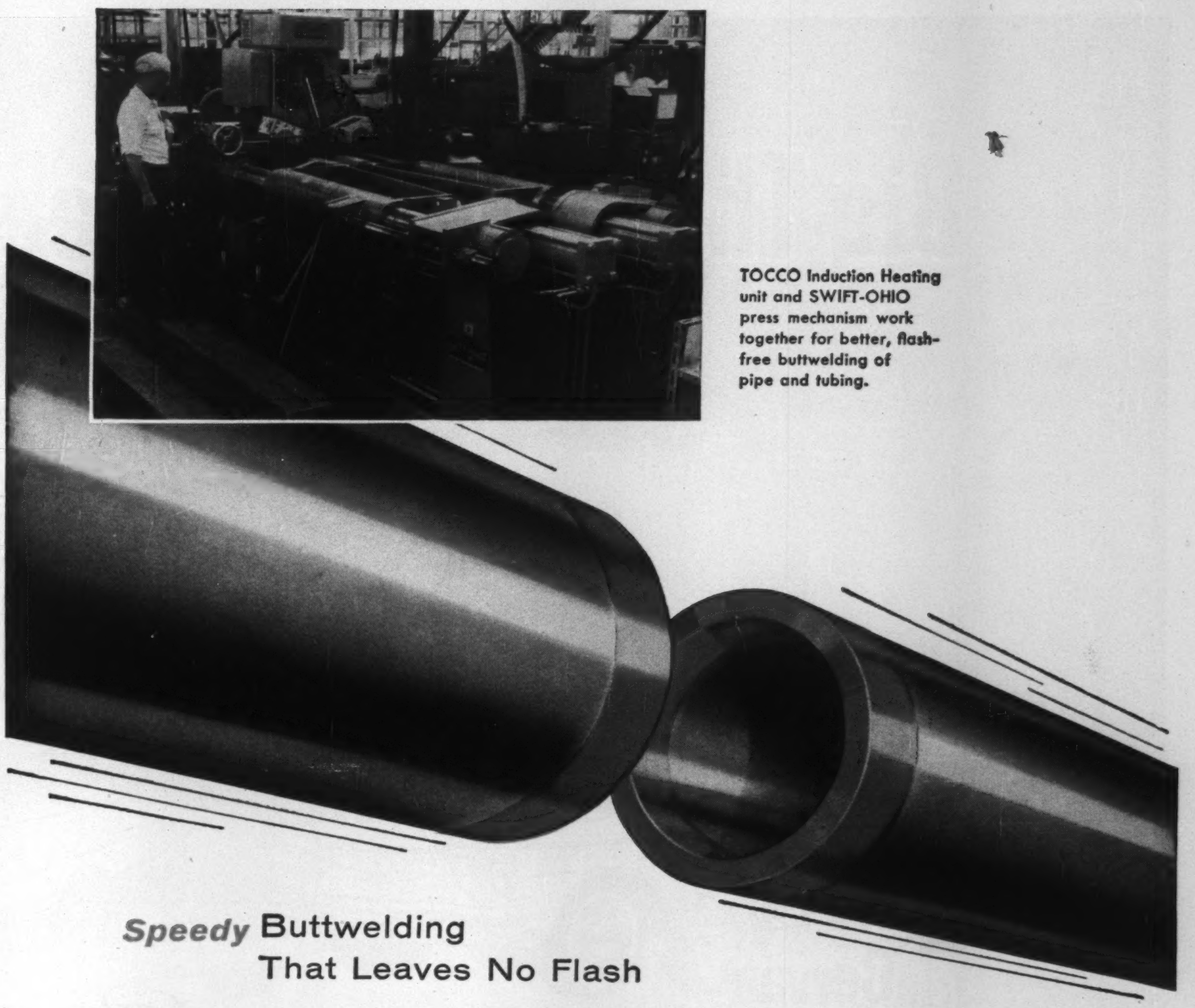
Capacity to 6 inch plate cold

THE LARGEST EVER BUILT

BERTSCH & COMPANY

CAMBRIDGE CITY INDIANA

Organized 1879 • Incorporated 1911



TOCCO Induction Heating unit and SWIFT-OHIO press mechanism work together for better, flash-free buttwelding of pipe and tubing.

Speedy Buttwelding That Leaves No Flash

with TOCCO* Induction Heating

Now, in less than a minute you can get flash-free, smooth joints on any size pipe, regardless of its diameter or wall thickness.

Conventional buttwelding methods produce strong, sound joints but leave a brittle flash inside or outside the pipe. Inside flash can seriously impede fluid flow. Particularly on long lengths of pipe, removal of this inside flash is a real production headache—time consuming and expensive.

Whether *your* production bottleneck involves buttwelding, soldering, brazing, heat treating or forging, it pays you to investigate TOCCO as an economical way to do it better, faster and at lower cost.

TOCCO

JUST PUSH A BUTTON

THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today— NEW FREE Bulletin

The Ohio Crankshaft Co. • Dept. A-1, Cleveland 5, Ohio

Please send reprint of article from STEEL Magazine entitled "Buttwelder Leaves No Flash".

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Company______________________________

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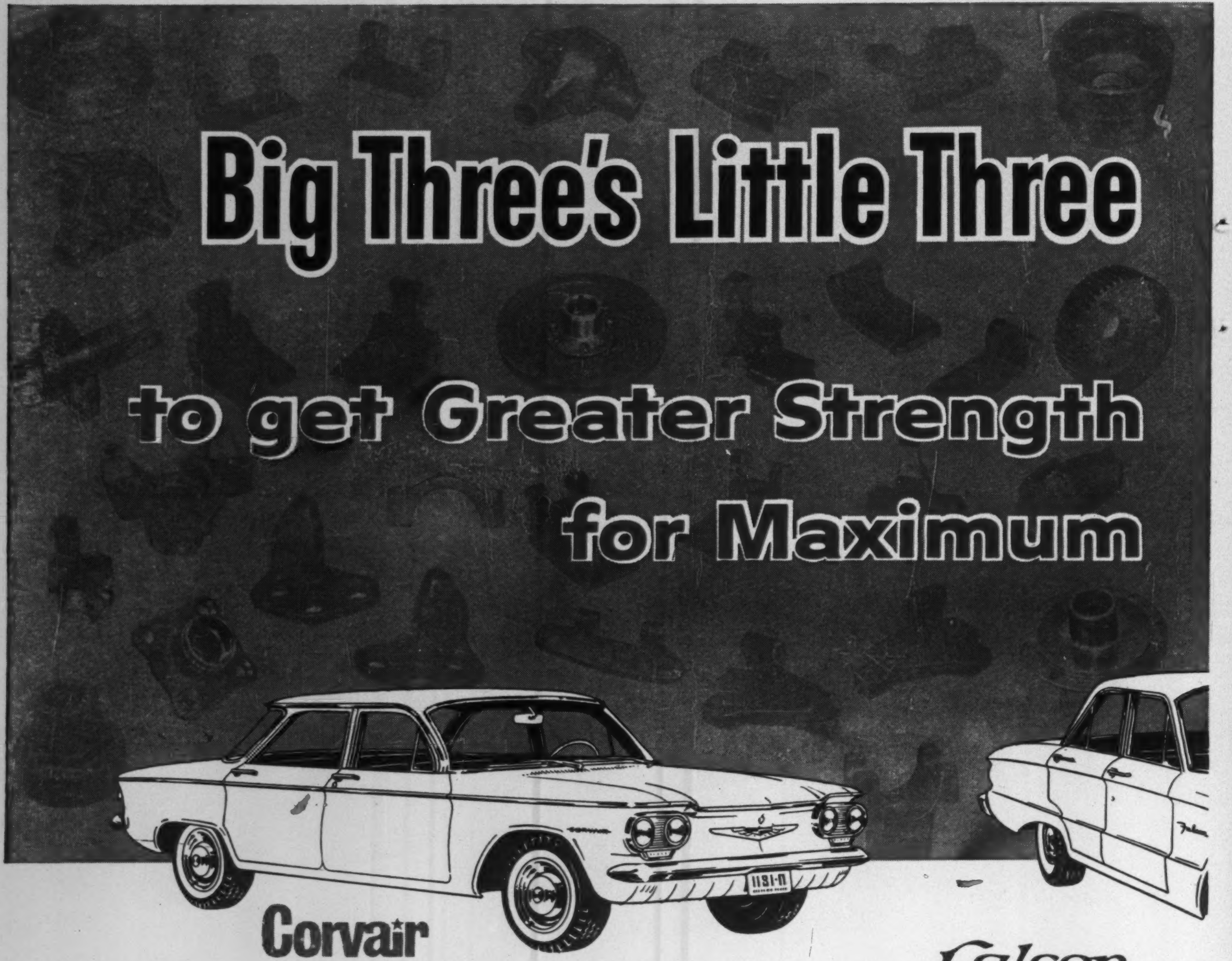
City____________________Zone_____State__________

Big Three's Little Three

to get Greater Strength for Maximum



Each time a trio of these new cars rolls off the assembly lines at Ford, Chrysler Corporation and Chevrolet, another set of 67 Malleable parts goes into action to give American drivers more dependability, convenience and economy.

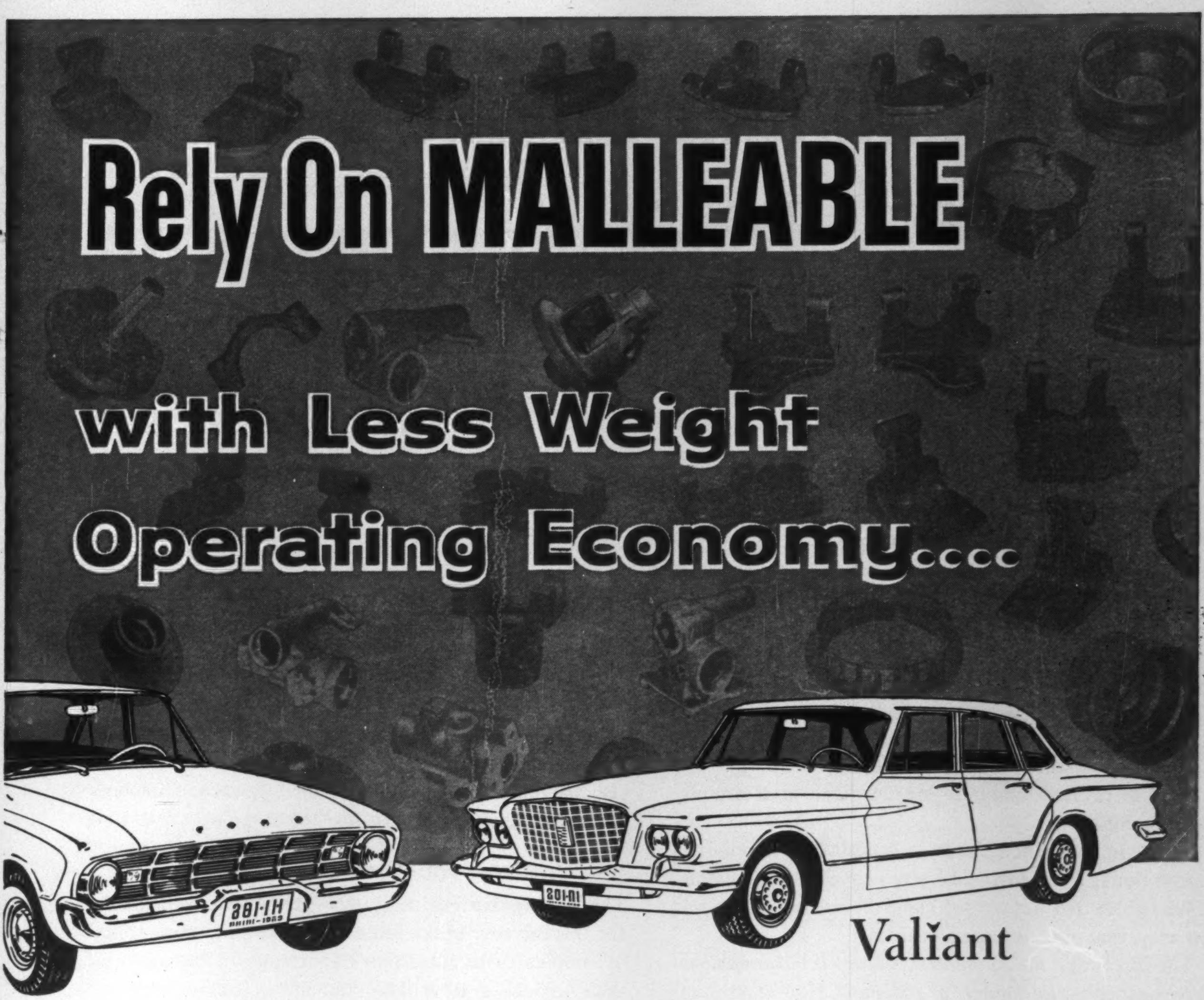
Valiant, Corvair and Falcon Use Greater Proportions of Malleable Iron Than the Three Conventional Cars!

Brand new from tread up, the Corvair, Falcon and Valiant are the result of intensive investigation, engineering and testing . . . all done to produce lighter, more economical cars without sacrificing the safety and convenience demanded by the American public.

To accomplish this, the automobile industry's

These companies are members of the MALLEABLE CASTINGS COUNCIL

CONNECTICUT
Connecticut Mall. Castings Co., New Haven 6
Eastern Malleable Iron Co., Naugatuck
New Haven Malleable Iron Co., New Haven 4
DELAWARE
Eastern Malleable Iron Co., Wilmington 99
ILLINOIS
Central Fdry. Div., Gen. Motors, Danville
Chicago Malleable Castings Co., Chicago 43
Moline Malleable Iron Co., St. Charles
National Mall. and Steel Castings Co., Cicero 50
Peoria Malleable Castings Co., Peoria 1
Wagner Castings Company, Decatur
INDIANA
Link-Belt Company, Indianapolis 6
National Mall. & Steel Castings Co., Indianapolis 22
IOWA
Iowa Malleable Iron Co., Fairfield
MASSACHUSETTS
Belcher Malleable Iron Co., Easton



three newest creations use *more* Malleable in proportion to total materials than all other models of the same manufacturers. Why? Malleable provides *more strength per dollar* than any other metal, ferrous or non-ferrous. Malleable castings have *more strength per pound* than "light" metals. Being the *most machinable of all ferrous metals* of similar properties, Malleable speeds production . . . produces better parts. Malleable castings have proved uniquely dependable for critical applications in millions of cars now on the highways.

How many places are there in your operations where Malleable castings can improve your products and reduce your costs? Check now . . . send drawings or an outline of your requirements to any of the progressive Malleable castings producers who display this symbol—

MEMBER
MALLEABLE
CASTINGS COUNCIL

Union Commerce Building, Cleveland 14, Ohio

MICHIGAN
Albion Malleable Iron Co., Albion
Auto Specialties Mfg. Co., Saint Joseph
Cadillac Malleable Iron Co., Cadillac
Central Fdry. Div., Gen. Motors, Saginaw

MINNESOTA
Northern Malleable Iron Co., St. Paul 6

NEW HAMPSHIRE
Laconia Malleable Iron Co., Laconia

NEW YORK
Acme Steel & Mall. Iron Works, Buffalo 7
Frazer & Jones Company Division Eastern Malleable Iron Co., Solvay
Oriskany Malleable Iron Co., Inc., Oriskany
Westmoreland Mall. Iron Co., Westmoreland

OHIO
American Malleable Castings Co., Marion
Central Fdry. Div., Gen. Motors, Defiance
Dayton Mall. Iron Co., Ironton Div., Ironton
Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 16
Maumee Malleable Castings Co., Toledo 5
National Mall. and Steel Castings Co., Cleveland 6

PENNSYLVANIA
Buck Iron Company, Inc., Philadelphia 22
Erie Malleable Iron Co., Erie
Lancaster Malleable Castings Co., Lancaster
Lehigh Foundries Company, Easton
Meadville Malleable Iron Co., Meadville
Pennsylvania Malleable Iron Corp., Lancaster

TEXAS
Texas Foundries, Inc., Lufkin

WEST VIRGINIA
West Virginia Mall. Iron Co., Point Pleasant

WISCONSIN
Chain Belt Company, Milwaukee 1
Federal Malleable Company, Inc., West Allis 14
Kirsh Foundry Inc., Beaver Dam
Lakeside Malleable Castings Co., Racine
Milwaukee Malleable & Grey Iron Works, Milwaukee 46

New Aluminum Engine Focuses Basic Agreement in

Increased use of aluminum by ALL automobile manufacturers proves that the experts agree on this major point: "big" car or "small" car . . . the more aluminum the more

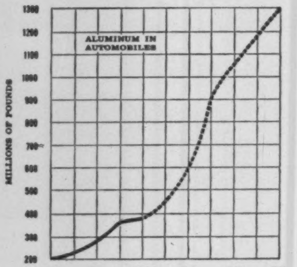
EFFICIENCY, ECONOMY, PERFORMANCE, LASTING BEAUTY, VALUE

America's newest compact cars are here.

And so is the aluminum engine, made of Reynolds Aluminum.

Now you have a new choice in American automobiles: conventional front engine or new rear engine. And this is the choice that has caused some discussion, even controversy, that may obscure a basic fact.

The fact is that *the automobile industry is in harmonious agreement on the advantages of aluminum.* How aluminum is used—to reduce dead weight, or cut manufacturing costs, or provide decorative trim of lasting and rust-free beauty—may vary from one manufacturer to another.

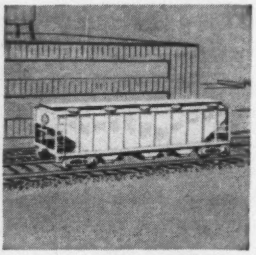


But the agreement on the advantages of aluminum is demonstrated by the record —*the continuous increase in the use of aluminum by every automobile manufacturer.*

The automobile experts have demonstrated that they agree on this major point: *"big" car or "small" car, the more aluminum the more efficiency, economy, performance, lasting beauty, and value.*

Aluminum: Versatile and Rugged

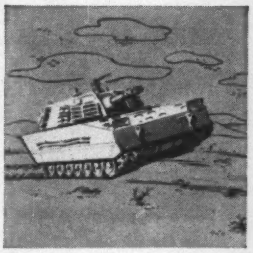
The automotive engineers who have been responsible for this increase in the use of aluminum in automobiles are familiar with aluminum's advantages. They use it in their homes—as Reynolds Wrap and as cooking utensils, for example. They know aluminum as a most versatile and rugged metal, far stronger than steel, pound for pound.



They specify it for pistons, perhaps the hardest working parts in any automobile. They see it in use as the aircraft metal—for airplane engines, airframes, and wings that carry tremendous loads. They see aluminum dump trucks and railway freight cars taking terrific poundings and

REYNOLDS

Attention on Major Point of Automobile Industry



making their extra payloads profitable.

And they work with the armed services in making aluminum-armored tanks, for which aluminum's lightness provides superior mobility, and aluminum's toughness provides superior protection.

Efficiency's Greatest Enemy: Excess Weight

These automotive engineers know that the greatest enemy to efficiency is excess weight. And they fight that enemy with aluminum, which weighs only one-third as much as steel or copper. By reducing dead weight with aluminum, they improve efficiency. And thus they improve performance and economy. And safety.

For example: If a 4,000 pound car is powered with 200 horsepower, that's 20 pounds per horsepower. If the weight of the car can be reduced by 1,000 pounds, the burden, the load to push around, is only 15 pounds per horsepower. That's less work for the engine. Less work for the brakes. A more efficient automobile because of reduction in excess weight.

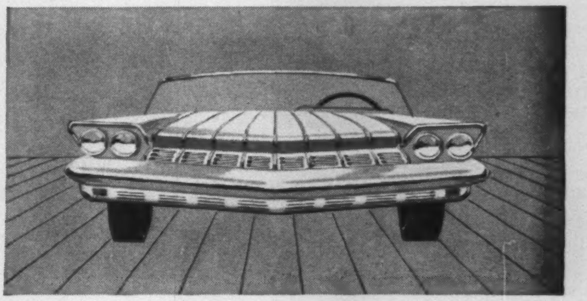
And the way to take off weight is to use aluminum.

So the new lightweight aluminum engines, made with Reynolds Aluminum, represent a long stride forward along the road the entire automobile industry is traveling—the aluminum road that leads to greater efficiency, economy, and value.

There will be other aluminum engines in the years to come—some in front, some in rear, some air-cooled, some liquid-cooled, depending on the needs of each particular model design.

The Automotive Future Is Bright . . . With Aluminum

And there will be other uses of aluminum to reduce weight and increase value: *Aluminum bumpers* . . . they'll be stronger than the strongest steel bumpers of today, yet they'll weigh much less, and they'll never rust or flake or peel; *aluminum framing members* . . . strong, yet light in weight; *aluminum roof panels*, whose light weight will lower the center of gravity; *aluminum wheels*, with integral wheel, brake drum, and wheel cover to improve braking action and reduce tire wear; *aluminum hood-grilles*, designed as single integral stampings to reduce manufacturing costs.



As the leading supplier of aluminum for automobiles, and as the exclusive supplier of aluminum for America's first mass-produced aluminum automobile engine block, we are proud to be working with the pioneers who are contributing so much to automotive progress.

We're proud that *all* the great new 1960 cars are made with Reynolds Aluminum. And our current expansion program is proof positive that we are preparing for the even greater use of aluminum in the automobiles of the future. *Reynolds Metals Company, P.O. Box 2346-JK, Richmond 18, Virginia.*

ALUMINUM

Watch Reynolds TV shows—"ALL STAR GOLF"—
"BOURBON STREET BEAT" and "ADVENTURES IN PARADISE"—ABC-TV

NOW

BULLARD DYNATROL*

FIRST

FULLY POWER-CONTROLLED

Dynatrol V.T.L. has Bullard's new Dynamic Precision Control . . . a fully powered machine tool control system which pays off in greater production.

Dynamic Precision Control keeps the tool in the cut more of the time . . . cuts time between cuts . . . increases the operating speed and output of the machine.

Dynatrol provides **infinitely variable feed rates** throughout the full range and **variable traverse rates** from zero to nine feet per minute. Dynatrol provides complete flexibility of control both in and out of the cut. Feed rates may be advanced or retarded while the machine is cutting to obtain maximum tool performance and productivity.

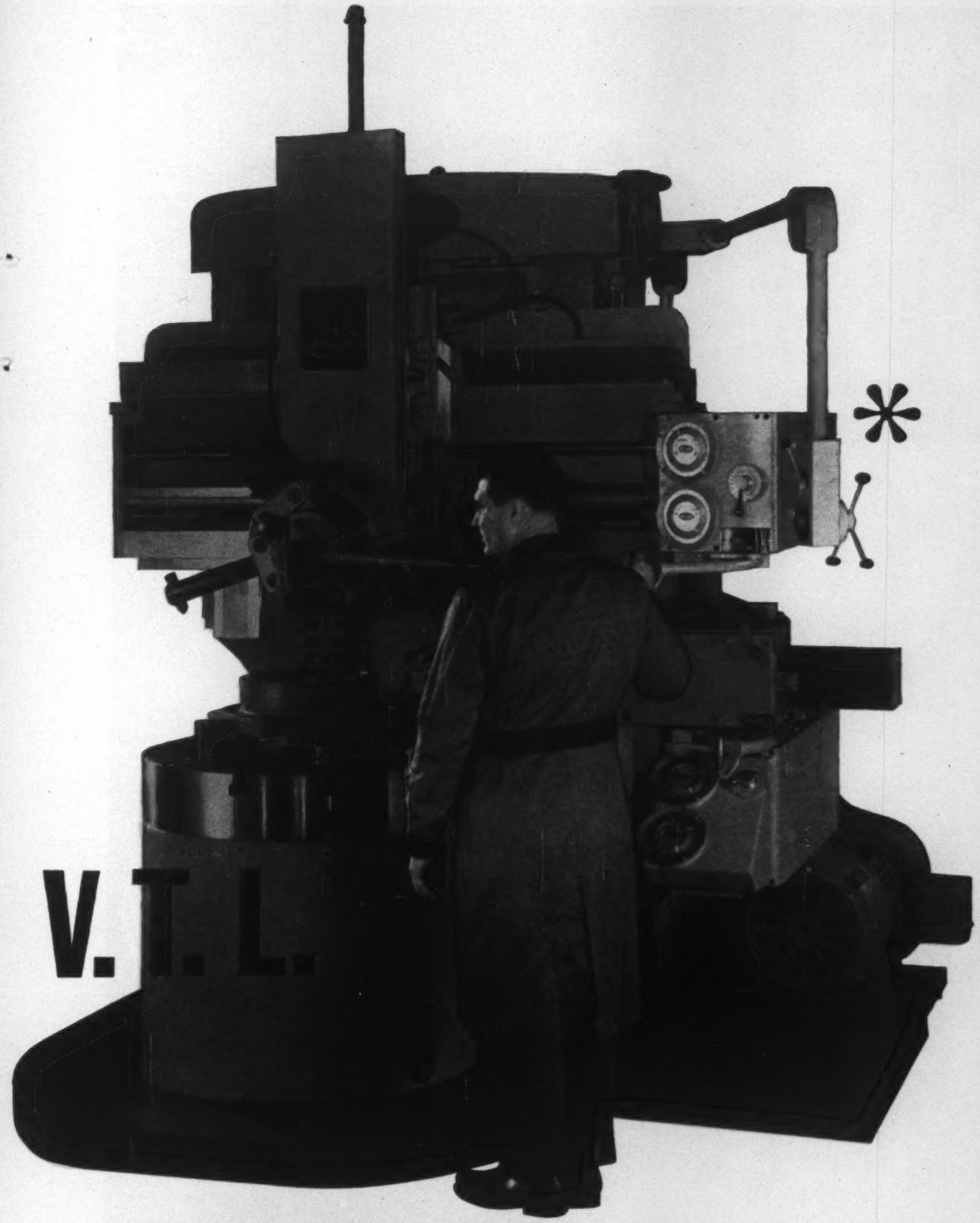
Dynatrol provides **single lever control for all motions of each head.** Variable traverse rates, feed engagement and full directional motions are obtained through one lever located in the most advantageous position for the convenience of the operator. Equally simple remote controls are available for machines of all sizes. Nine sizes from 26″ to 124″ table diameter.

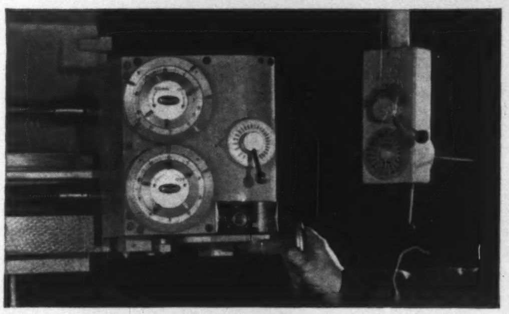
Send to The Bullard Company, Bridgeport 9, Connecticut, for detailed catalog. Telephone EDison 6-2511.

*Trademark

BULLARD

"YOU CAN'T





*

This is the control center of the new Dynatrol V.T.L. Feed rates, infinitely variable from zero to maximum, are directly geared to table rpm. A simple pendant controls start, stop and speed of table.

BEAT A BULLARD”

High-Spot Features of the DYNATROL® V.T.L.

Dynatrol V.T.L. is POWER CONTROLLED

By lever or pendant—it's your choice—head traverse rates can be varied from zero to nine feet per minute. Easy-to-read dials show exact position.

Feed selector gives infinitely variable feed rate without interrupting the cut.

Dynatrol V.T.L. is VERSATILE

Available equipment includes:

Bullard variable speed drive for infinitely variable table speeds throughout the full range with no loss of usable horsepower.

Fully automatic operation by Bullard Man-Au-Trol or point-to-point or continuous path numerical control systems.

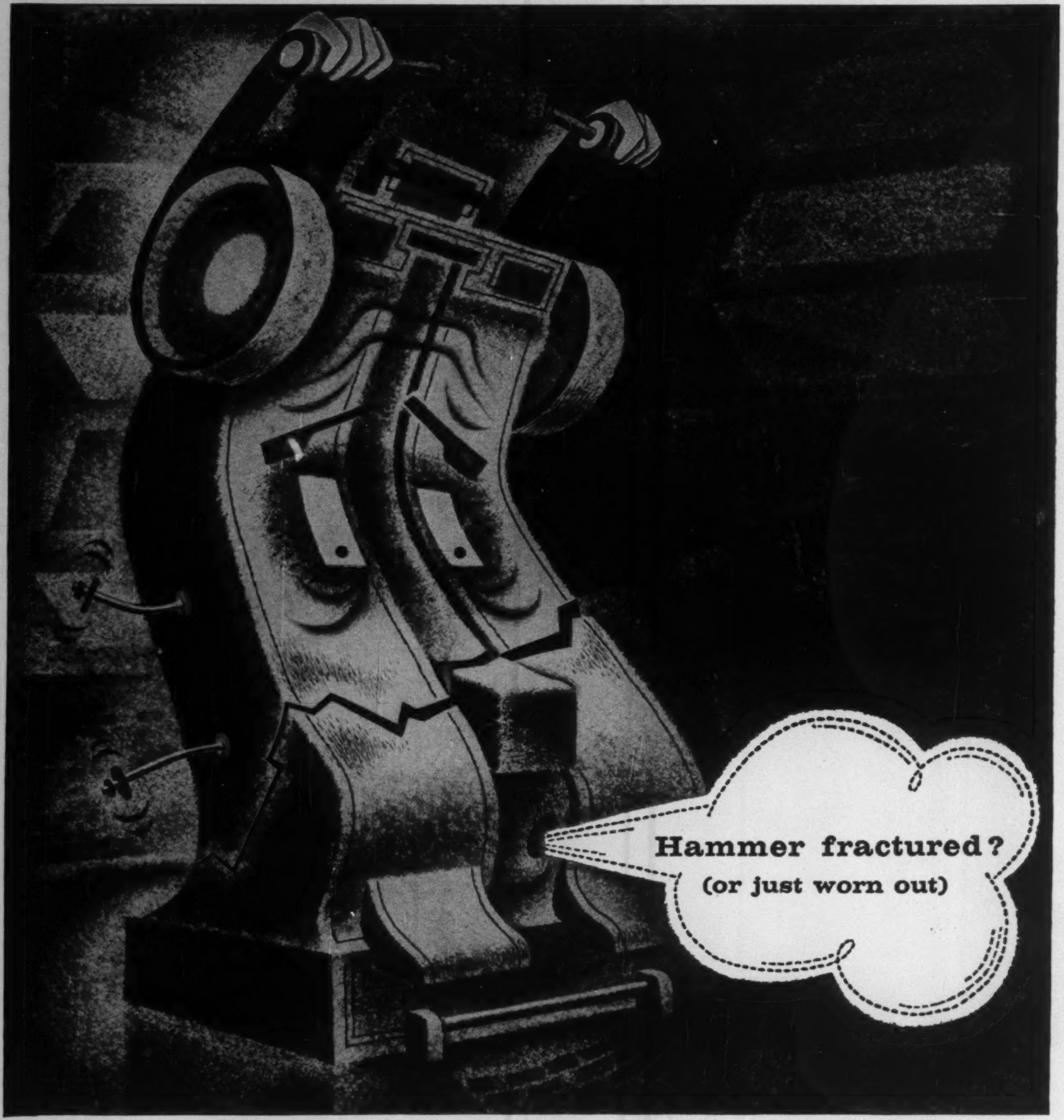
Unique Size-Au-Trol* for accurate positioning of all heads. Contouring attachments: Hydraulic, electronic or electro-hydraulic. Four- or five-sided power-indexing turret heads. Thread cutting, drum scoring and angle turning attachment. Power-operated chucks.

Dynatrol V.T.L. is COMPACT

The new Bullard Dynatrol V.T.L. is compact in design, rigid in construction, lower in height, reduced in floor area.

Dynatrol V.T.L. is EASY TO MAINTAIN

Automatic lubrication throughout... fewer parts... fewer adjustments... easily accessible.



Get new-forging performance at 1/3 the cost from ERIE FOUNDRY REBUILDING SERVICE

Here at the Erie Foundry Rebuilding "Hospital", we disassemble and inspect your forging hammer, remachine worn surfaces, true bearings, replace broken parts, repair cracked parts. Once the hammer is reassembled, tested and put back in operation, it'll be as spry and sound as a new machine—but at one-third the cost!

Stands to reason that the leaders in forge manufacture for over 60 years should be the best source for forge repair.

Regardless of who made it, or how badly it's cracked, broken or worn, your forging hammer will recover most quickly at Erie Foundry's Rebuilding "Hospital". Write for the complete story.

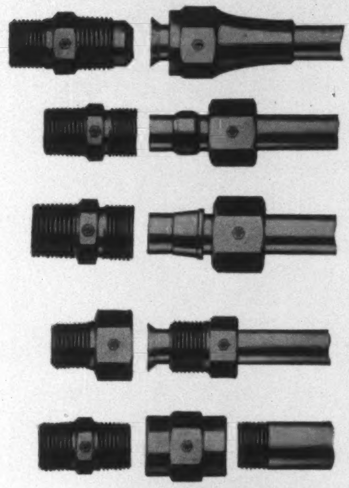
ERIE

THE WORLD'S GREATEST NAME
IN FORGING SINCE 1895

ERIE FOUNDRY CO.
ERIE 1, PA.

EF-59-02

brass tube fittings



S.A.E. 45° FLARE
USE with copper, brass, aluminum, steel and plastic tubing. U.L. listed; A.G.A. approved. Meets SAE Hydraulic standards and A.S.A. and A.S.M.E. codes. PRESSURE RATING: up to 3000 p.s.i. Sizes: ⅛" to ¾".

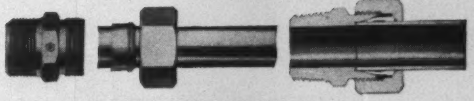
COMPRESSION
USE with copper, brass, aluminum and plastic tubing. U.L. listed; A.G.A. approved. Meets SAE Hydraulic Tube Fittings Standards and A.S.A. and A.S.M.E. codes. PRESSURE RATING: up to 2000 p.s.i. depending on O.D. of tube. Sizes: ⅛" to ¾".

SELF-ALIGN®
USE with copper, brass, aluminum and plastic tubing. No flaring, soldering, welding, or special tube preparation needed. PRESSURE RATING: up to 2000 p.s.i. Sizes: ⅛" to ¾".

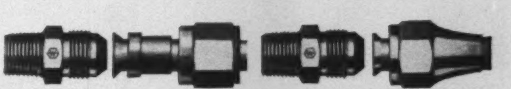
INVERTED FLARE
USE with copper, brass, aluminum, steel and plastic tubing. Meets SAE Hydraulic Tube Fittings and A.S.A. and A.S.M.E. codes. PRESSURE RATING: up to 3000 p.s.i. Sizes: ⅛" to ¾".

PIPE FITTINGS
USE with brass or steel pipe. Meets specifications of SAE TPHL Fittings Committee. PRESSURE RATING: up to 5000 p.s.i. Sizes ⅛" to ¾".

forged steel fittings



ERMETO HYDRAULIC TUBE FITTINGS
Most dependable high pressure fitting in the world . . . easiest installation. FOR FLARELESS TUBE SYSTEMS. No flaring, threading, welding or soldering. Available with carbon steel; stainless steel; cadmium plated or Weathercote finish. Standard Sizes: ⅛" through 2". Pressure Ratings: up to 10,000 p.s.i.

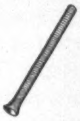


FLARE-TWIN HYDRAULIC TUBE FITTINGS
SAE 37° FLARE (J.I.C.) STEEL FOR FLARE TUBE SYSTEMS. No threading, welding or soldering. Two-pc. and three-pc. carbon and stainless steel with cadmium plated or Weathercote finish. Standard sizes: ⅛" through 2". Pressure Ratings: up to 10,000 p.s.i.

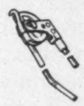
the WEATHERHEAD symbol is your assurance of SERVICE, QUALITY and DEPENDABILITY in all industrial hose and tube fitting needs

tube working tools

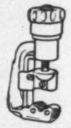
Designed to make fast, easy work of every tubing job. We offer a complete line of low cost, quality made tools for cutting, bending and flaring tubing up to ¾" in O.D.



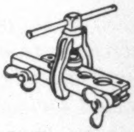
Spring-Type Bender



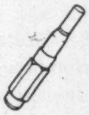
Mechanical Bender



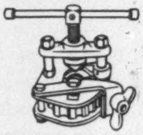
Tube Cutter



Bar-Type Flaring



Swaging



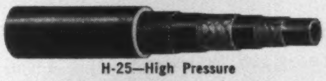
Burnishing Flaring

hose

Available in over 20 different types for any industrial application up to 10,000 p.s.i. pressures and sizes from ⅛" to 2" I.D. Five standard hoses meet most requirements.

H-9—Low Pressure

H-17—Medium Pressure

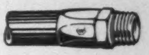


H-25—High Pressure

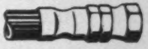
H-69—Medium High Pressure

H-108—Medium High Pressure

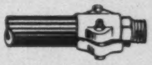
hose assemblies



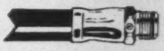
Standard 2-pc. Reusable Ends



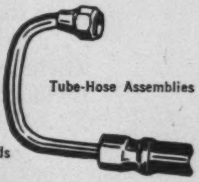
Reusable Steel Ends



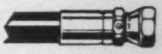
Reusable Clamp-Type Ends



Permanently Crimped Ends



Tube-Hose Assemblies



Permanently Swaged Ends

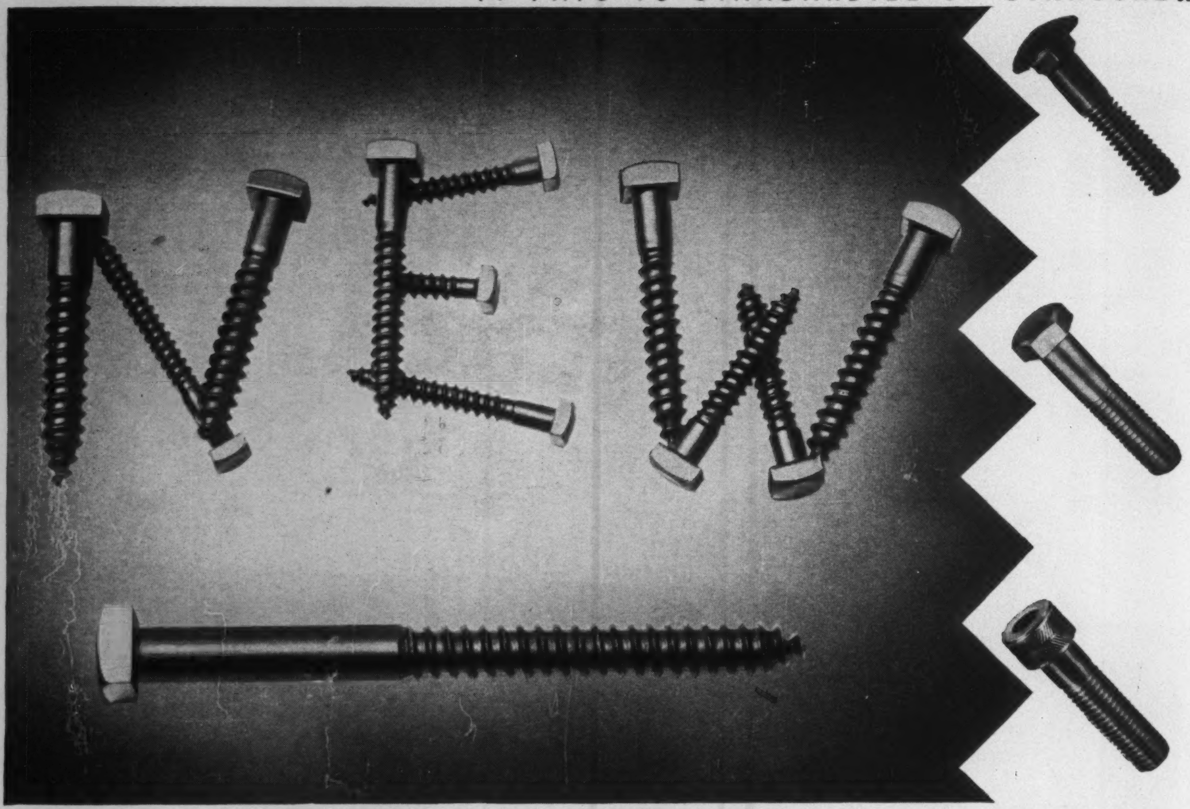
YOUR SINGLE SOURCE SUPPLIER OF ALL INDUSTRIAL HOSE AND FITTINGS NEEDS

THE WEATHERHEAD CO.

FORT WAYNE DIVISION • **Dept. IA-1, 128 West Washington Blvd. • Fort Wayne, Indiana**

In Canada: The Weatherhead Co., Ltd., St. Thomas, Ontario

IT PAYS TO STANDARDIZE ON **STANSCREW**



Lag Bolts Expand Stanscrew Line To Over 5,500 Different Fasteners

Hex machine bolts . . . carriage bolts . . . and now, a broad selection of lag bolts . . . all quickly available from Stanscrew.

These new gimlet point lag bolts, all with full-sized shanks, conform to ASA Standards and are produced to Stanscrew's rigid criteria of fastener quality. Almost 100 sizes are offered as stock items.

With lag bolts, the Stanscrew line now covers more than 5,500 standard catalogued fasteners . . . carefully developed to answer the overwhelming majority of American industrial needs. Included are socket, set, and cap screws . . . nuts . . . dowel and taper pins . . . pipe plugs . . . studs . . . and, of course, Stanscrew's complete bolt series.

Each of these 5,500 fasteners is always in stock at three conveniently located plants. A rigidly enforced Stanscrew policy assures regular orders are shipped within 24 hours. This means your Stanscrew distributor can provide especially fast service on all occasions . . . and be particularly helpful in emergencies.

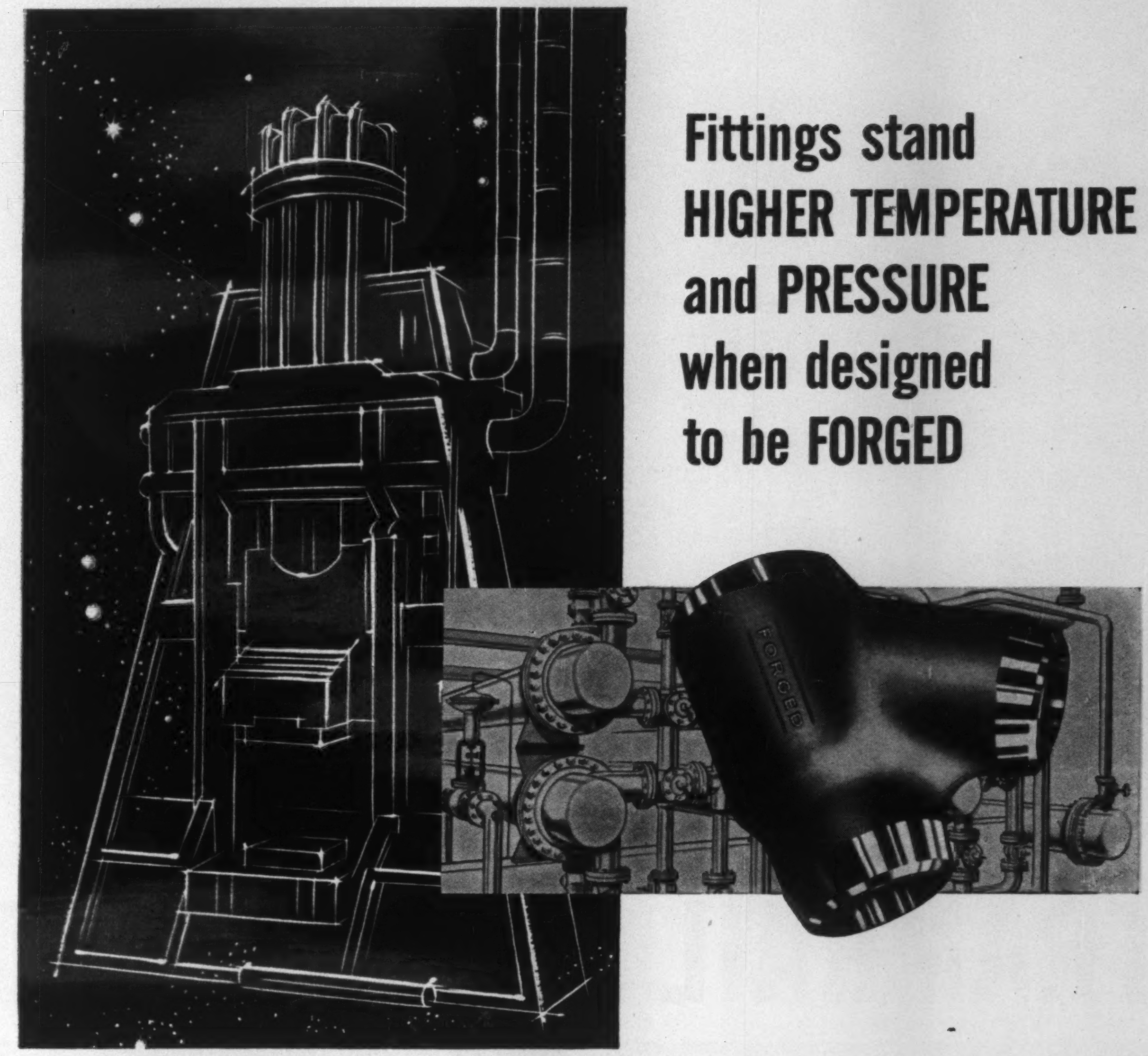
Your Stanscrew distributor will also be happy to arrange a visit from the Stanscrew fastener specialist. His recommendations on your assembly procedures can often result in significant savings. Why not call your Stanscrew distributor today?

STANSCREW FASTENERS®

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

Fittings stand HIGHER TEMPERATURE and PRESSURE when designed to be FORGED



Modern steam-powered forging hammer

Vital fittings in refineries and chemical plants are forged, for only forgings can provide maximum strength required without excess weight. Fabrication is simpler, hanging and supporting are less expensive, life of fittings under severe operating conditions is extended.

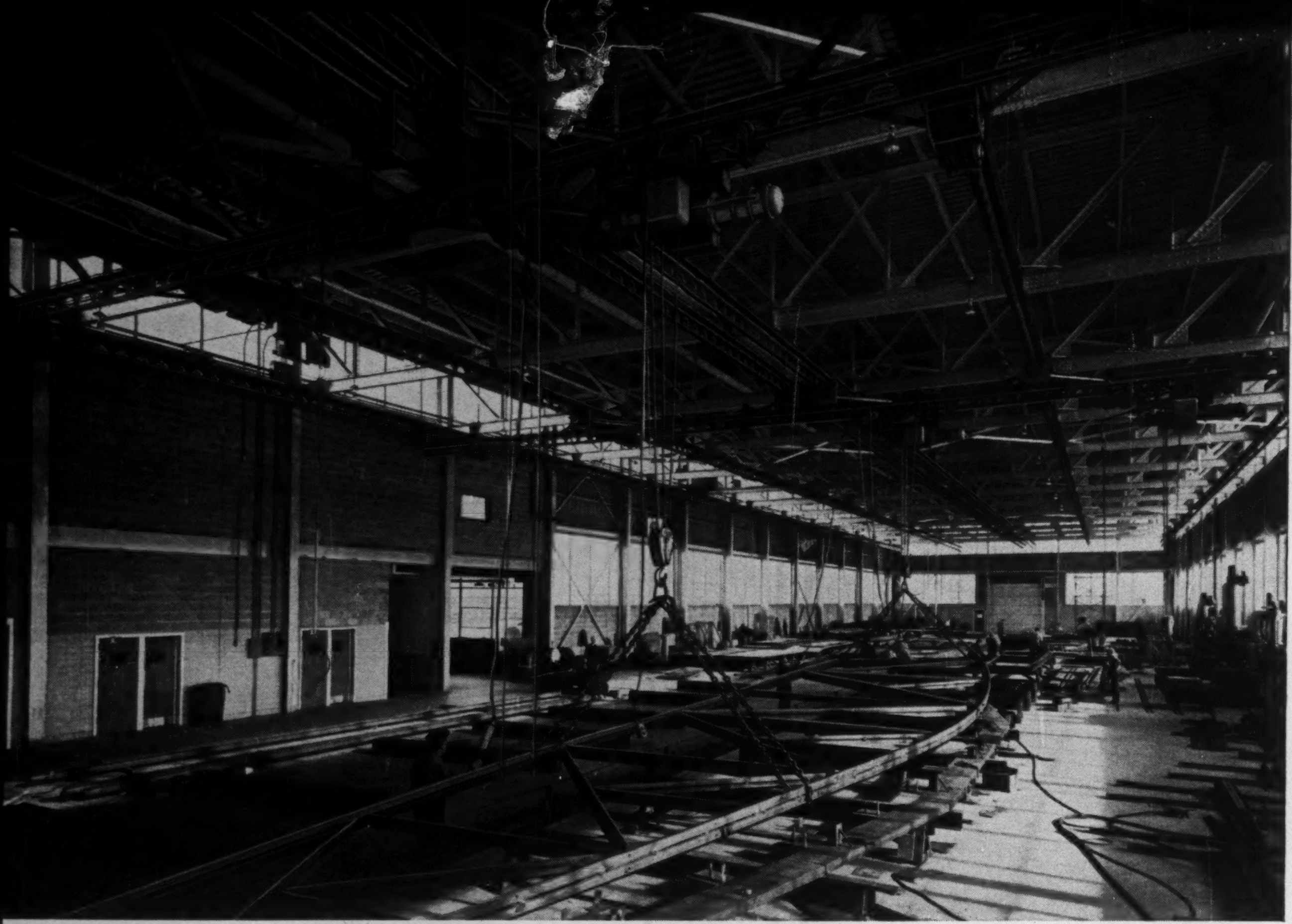
The hammer-compacted metallurgical structure of forged parts gives superior performance in containing gases or liquids under high temperatures or pressures, vibration, high-velocity fluid flow and corrosion.

Design *any* vital parts to be forged . . . strength/weight ratios are higher, as-assembled costs are lower, performance is better. Literature to help you design, specify, and procure forged parts will be sent on request.

When it's a vital part, design it to be FORGED

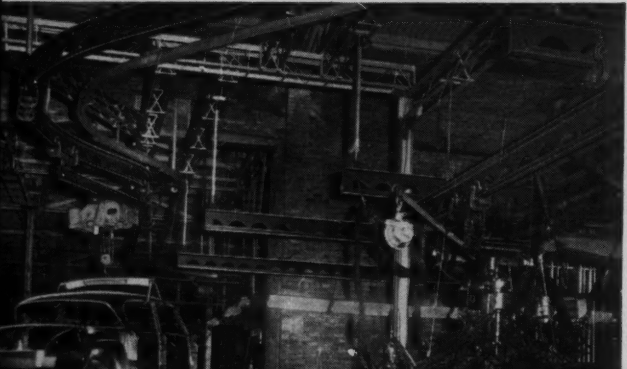
Drop Forging Association • Cleveland 13, Ohio

Names of sponsoring companies on request to this magazine

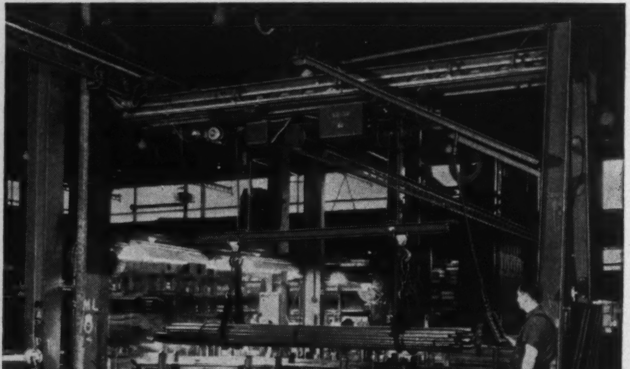


FOUR INTERLOCKED CRANES handle 100-foot long trusses in structural plant. Cranes are 5 tons capacity, 3-runway, 36 and 40 feet long. They operate individually or together as units. Trusses are removed from jig and advanced to next location within a few minutes by two men operating crane control buttons.

TRAMRAIL IDEAS THAT

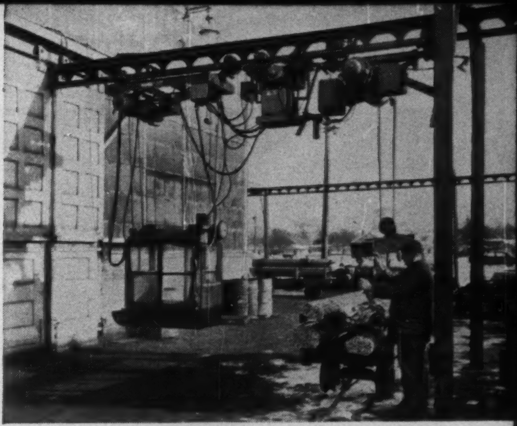


TRACK AND CRANE SYSTEM speeds automobile body fabrication. Tramrail cranes support spot-welding equipment and move assembled bodies between departments. Up to 105 bodies are produced per 8-hour day in this particular work area.



MOTORIZED GANTRY CRANE with spreader beam provides efficient handling in local area for bundles of tubing. Gantries can be hand-propelled, or partly electrified, or completely motorized like one illustrated.

EFFICIENT CRANE COVERAGE reduces time loss of skilled workers and expensive machine tools. Hand-propelled Tramrail cranes with electric hoists are an important factor in maintaining a profitable operation in this type of shop.



RAISE-LOWER CAB CARRIER permits operator leaving cab at any point to attach hooks to materials to be transported. Floor help is unnecessary and costs are consequently held at a minimum. This unit operates both outside and inside of the building.

HAND PROPELLED CRANE with one-ton chain hoist provides overhead conveying and hoisting service at low cost. Operation is smooth and easy, with practically no maintenance.

CUT COSTS...

Whatever your handling needs, most likely versatile Cleveland Tramrail can be adapted to solve them.

In nearly every segment of industry, various forms of Cleveland Tramrail equipment are being used to advantage. In fact, over 40,000 installations are serving 9,000 companies.

The equipment speeds production, saves floor space, improves safety, reduces floor congestion — and cuts costs tremendously.

Cleveland Tramrail consists of track, switches, carriers, hoists, grabs, etc., which can be combined in a thousand-fold ways to exactly suit your need. Illustrated here are a few random examples of how the equipment is being used. Cleveland Tramrail can be furnished for simple manual operation or with any degree of electrification, including fully automated systems.

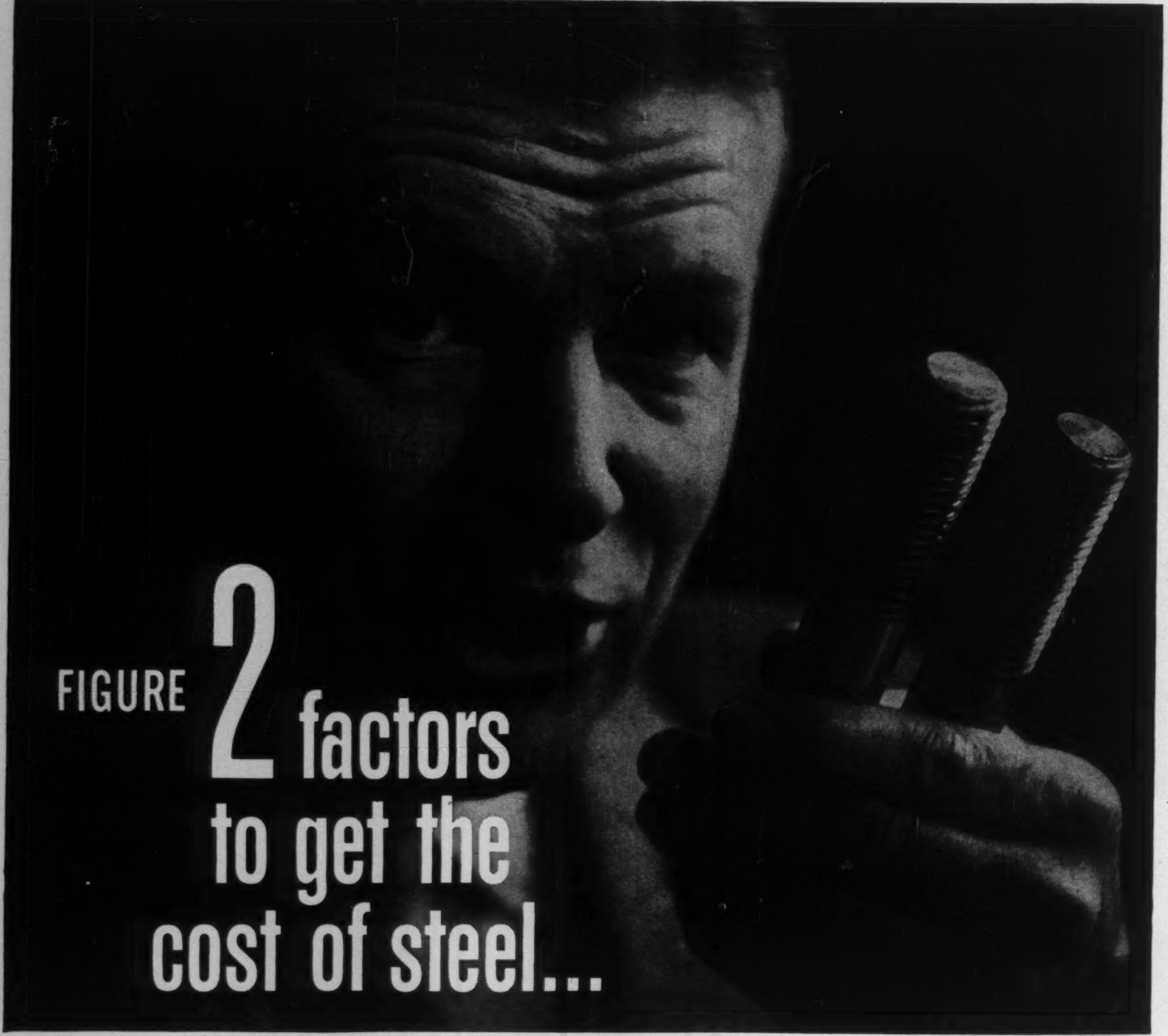
A local Cleveland Tramrail sales engineer will be glad to discuss overhead materials handling with you and show you installations at work in nearby plants. Why not get in touch with him? A card or letter to us will do the trick.

THREE-WAY TRACK SWITCH enables this tractor-driven 5-ton electric hoist carrier to travel to various parts of a plant. This is another example of the many handling arrangements possible with Cleveland Tramrail.

CLEVELAND
TRAMRAIL
AT WORK

This large book is the greatest in its field. Contains a wealth of valuable information. Covers details of 143 outstanding installations. Has 426 large photos, 59 system layouts, 69 other sketches. Write for your free copy of "Cleveland Tramrail at Work" on your company letterhead. A nearby representative will deliver it without obligation.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
4804 EAST 290th STREET WICKLIFFE, OHIO



COST OF POSSESSION and delivered cost!

The high cost of possession may surprise you. It has surprised many a smart, informed steel user.

When your Steel Service Center performs first cutting operations you save operating and capital costs of the equipment it requires. You get steel delivered quickly from stock, ready for use. You save costs of storage and handling. You cut scrap loss and wastage.

There's a nearby Steel Service Center set up to serve you, not only with steel, but with technical know-how.

If you are buying more than three months' inventory because you think it's a bargain, compare *all* of your costs with the cost and *freedom from risk* of buying from your Steel Service Center. For more information, get the booklet, *What's Your Real Cost of Possession for Steel?* from your Steel Service Center. Or write to Steel Service Center Institute, Inc., 540-D Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered ________
Cost of capital:
  Inventory ________
  Space ________
  Equipment ________
Cost of operation:
  Space ________
  Materials handling ________
  Cutting & burning ________
  Scrap & wastage ________
Other costs:
  Obsolescence ________
  Insurance ________
  Taxes ________
  Accounting ________
TOTAL ________

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

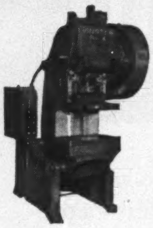
Per ton, cut-to-size, and delivered
TOTAL ________

STEEL
SERVICE CENTER
INSTITUTE

...YOUR STEEL SERVICE CENTER

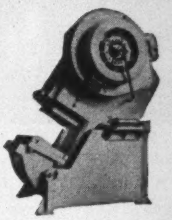
TYPES AND CAPACITIES—MINSTER® PRESSES—A COMPLETE LINE

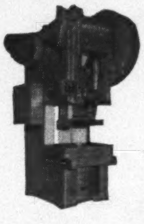
SINGLE POINT, GAP TYPE, OPEN BACK



Series 1
Inclinable
6 Capacities
12 THRU 60 TONS
Bulletin Section 1

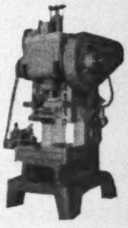
Series 1
Inclinable
Two Capacities
75 THRU 90 TONS
Bulletin Section 2

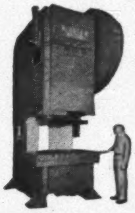




Series 70
Fixed Base
Four Capacities
45 THRU 90 TONS
Bulletin Section 3

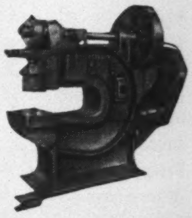
Series B1
Fixed Base, Automatic
Five Capacities
16 THRU 60 TONS
Gap Press Bulletin



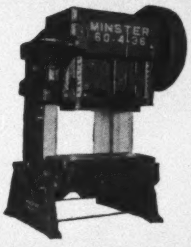


Series G1
Fixed Base or Inclinable
Four Capacities
75 THRU 250 TONS
Bulletin Series G1

Series 20
Deep Throat Type
Three Capacities
15 THRU 35 TONS
Gap Press Bulletin

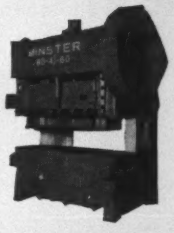


TWO POINT, GAP TYPE, OPEN BACK

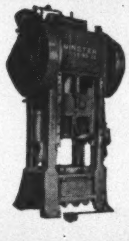


Series 60
Inclinable—Five Capacities
22 THRU 75 TONS
6 Widths Ea. Cap.
Request Specifications

Series 80
Fixed Base—
Five Capacities
22 THRU 75 TONS
6 Widths Ea. Cap.
Request Specifications

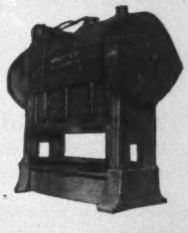


STRAIGHT SIDE PRESSES

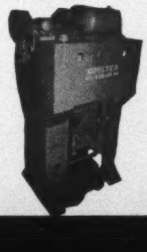


Series S1
Twelve Capacities
50 THRU 600 TONS
Bulletin Series S1

Series S2
Ten Capacities
50 THRU 400 TONS
Five Widths Ea. Cap.
Bulletin Series S2

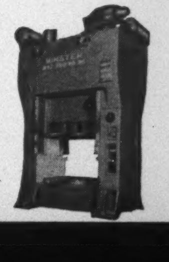


STRAIGHT SIDE PRESSES — M SERIES

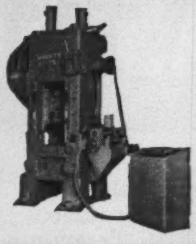


Series MS1
Three Capacities
300 THRU 500 TONS
Request Specifications

Series MS2
Five Capacities
150 THRU 500 TONS
Five Widths Ea. Cap.
Bulletin Series MS2

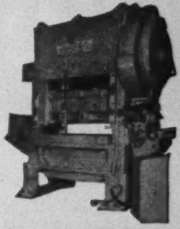


PIECE-MAKER AUTOMATIC PRODUCTION PRESSES

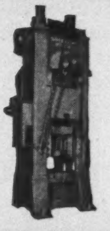


Series P1
Three Capacities
75 THRU 150 TONS
Bulletin Series P1

Series P2
Nine Capacities
20 THRU 300 TONS
Four Widths Ea. Cap.
Bulletin Series P2



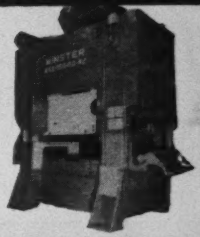
KNUCKLE JOINT PRESSES



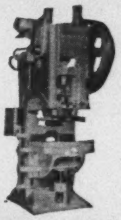
Series 90
Six Capacities
150 THRU 1000 TONS
Bulletin Series 90

PROGRESS-O-MATICS

Series PMS2
Five Capacities
150 THRU 500 TONS
Five Widths Ea. Cap.
Request Specifications



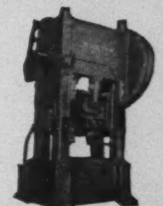
HORNING PRESSES



Series 10
Eight Capacities
16 THRU 90 TONS
Bulletin Series 10

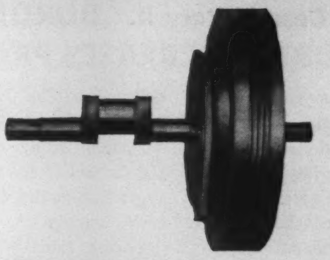
HEAVY DUTY BLANKER

40E-9
400 TON
Bulletin 40E-9



CLUTCH CONVERSIONS

Minster patented Combination Air Friction Clutch and Brake unit for clutch conversions increases production, reduces maintenance.
Bulletin CC57



MINSTER®

THE MINSTER MACHINE COMPANY
MINSTER, OHIO

FIRST IN PRESS DESIGN

MINSTER MACHINE COMPANY
MINSTER, OHIO

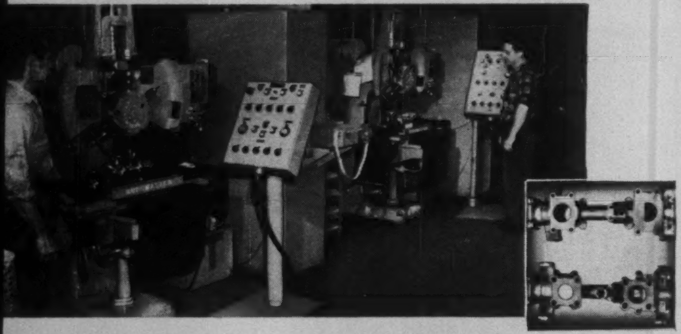
Gentlemen: Please send me a copy of Bulletin__________
Name__________ Title__________
Company__________
Address__________
City__________
Nature of Product__________

Production Increases of ......

BURGMASTER 6 & 8 SPINDLE

These case histories have been selected to show the actual savings and advantages produced by various models of Burgmaster Turret Drilling, Tapping, and Boring machines including hand operated, automatic Hydraulic, and Automatic Tape Controlled 6 and 8 spindle models. The machine features responsible for these production increases are, collectively: Power Turret Indexing, Skip Spindles when desired, Pre-selective spindle speeds, Pre-selective infinitely variable feeds, Pre-selective rapid approach and return, adjustable micro-depth stops, automatic cycles and tape controls. All machining operations are performed at the most efficient rate commensurate with fine finish, accuracy, speed, and longest tool life. Why not get the information on the Burgmaster that specifically suits your work? There is no obligation.

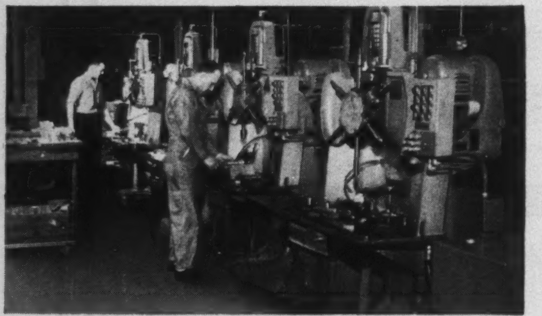
Case History I. BURGMASTER TAPE CONTROL TURRET DRILL INCREASES PRODUCTION 440%



Company: Clifford Manufacturing Co., Div. Standard-Thomson Corp., Waltham, Mass.
Part: #347 Stainless Steel Valve Body.
Holding: Simple quick acting clamps.
Operations: 59, including Center Drill, Drill, Ream and C'Bore.
Former Method: Multi-drill set-up using Dowel Holding Fixtures.
Former Time: 2.7 hours.
Present Time: .5 hours
Production Increase: 440%.
Other Advantages: Accuracy far beyond the required tolerance, less spoilage, finer finish, greatly reduced fixture cost.

Case History II. BURGMASTER AUTOMATIC HYDRAULIC 6 SPINDLE TURRET DRILL INCREASES PRODUCTION 406%

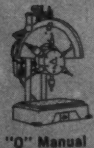
Company: Holley Carburetor Company, Warren, Mich.
Part: Fuel Control Bodies for Jet Engines—3 Parts.
Material: Aluminum Casting.
Holding: Simple Holding and Locating Fixtures.
Former Method: Single Spindle Drill Presses.
Production Increase: 406% average.
Other Advantages: One man runs 2 machines—quality is substantially improved—fewer rejections.

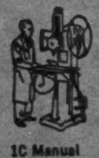


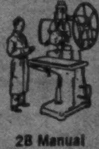
BURGMASTER
B

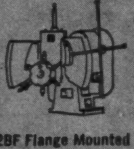
Write for Bulletin describing briefly the full line of Burgmaster Turret Drilling, Taping and Boring Machines. Detailed bulletins also available on each model. A 16mm sound film showing machines in operation is available from any office.

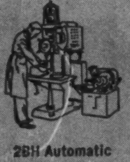
World's Largest Builder of Turret Drilling Machines

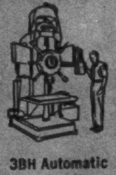

"O" Manual Power Index ¼" Capacity

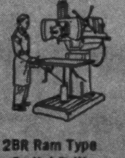

1C Manual Power Index ⅜" Capacity

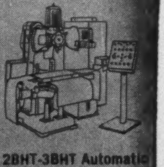

2B Manual Power Index ¾" Capacity


2BF Flange Mounted Power Index ¾" Capacity


2BH Automatic Hydraulic ¾" Capacity

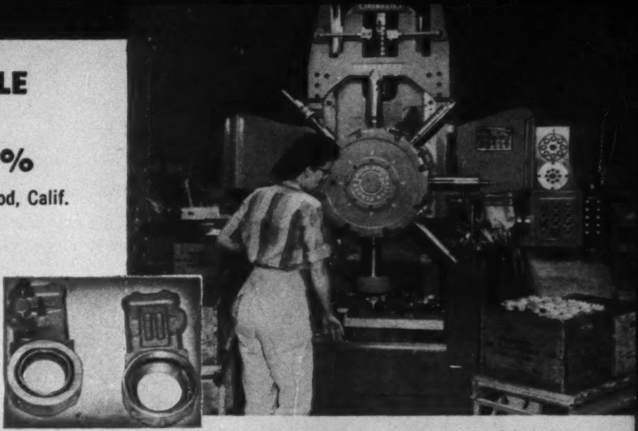

3BH Automatic Hydraulic 1½" Capacity


2BR Ram Type Radial Drill ¾" Capacity


2BHT-3BHT Automatic Tape Controlled ¾" and 1½" Capacity

440%, 406%, 277%, 300% & 300%

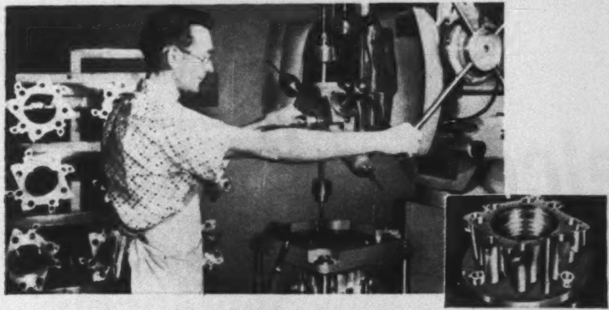
TURRET DRILLING MACHINES



Case History III. BURGMASTER 8 SPINDLE AUTOMATIC HYDRAULIC TURRET DRILL INCREASES PRODUCTION 277%

Company:	Whittaker Controls—Div. of Telecomputing Corp., Lynwood, Calif.
Part:	Aircraft Slide Fuel Valve Body.
Holding:	Special Air Indexing Fixture.
Operations:	8—including Bore, Groove, Chamfer, Face, Tap and Bottom groove—accuracy +.000 —.002
Former Method:	On Turret Lathe.
Former Time:	9 minutes.
Present Time:	3.25 minutes.
Production Increase:	277%.
Other Advantages:	Greater accuracy maintained, and less scrap loss. Does not require a skilled machinist.

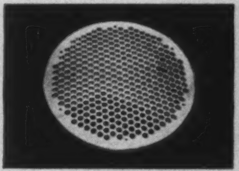
Case History IV. BURGMASTER 6 SPINDLE RADIAL TURRET DRILL INCREASES PRODUCTION 300%

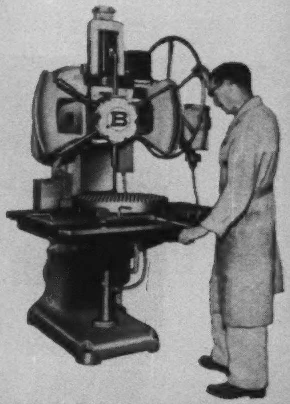


Company:	Convair (Pomona) a Div. of General Dynamics Corp.
Part:	Aluminum Hydraulic Manifold for Terrier Missile.
Total Operations:	96—including Drill, C'Sink, Ream, Chamfer and Tap—to accuracies of ±.002"
Holding:	Special Fixtures with Drill Bushings.
Former Method:	4 and 6 spindle table drills.
Former Time:	1½ hours.
Present Time:	½ hour.
Production Increase:	300%.
Other Advantages:	The total savings paid for the 6 Burgmasters in 2.04 years. Tool settings and cutting sequences are consistently and accurately repeated, dimensional consistency and closer tolerances are achieved.

Case History V. BURGMASTER 6 SPINDLE MANUAL TURRET DRILL INCREASES PRODUCTION 300%

Company:	Clayton Manufacturing Company, El Monte, California.
Part:	Tube Sheet for Heat Exchanger—361 Holes.
Material:	Mild Steel, 2" thick x 20 dia.
Holding:	Special Hand Indexing Fixture.
Operations:	6 per hole, including Center Drill, Drill, Core Drill, Ream, Radius, and Groove.
Former Method:	Radial Drill Press Costing $20,000.
Former Time:	5 min. per hole using quick change Tool Holder.
Present Time:	1 min. 35 sec. per hole.
Production Increase:	300%.
Other Advantages:	68% less machining time, the Burgmaster cost $4822 and replaced a $20,000 radial drill press. Note the Burgmaster in this shop averages 25% to 68% time savings on every job.





BURG TOOL
MANUFACTURING COMPANY, INC.
15001 South Figueroa Street, Gardena, California
FAculty 1-3510 DAvis 9-4158

BURGMASTER

BURGMASTER DIRECT SALES OFFICES:

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LOng Beach 1-1178

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14706 Detroit Ave.
ACademy 6-7030

Detroit 37, Mich.
13730 W. Eight Mile Rd.
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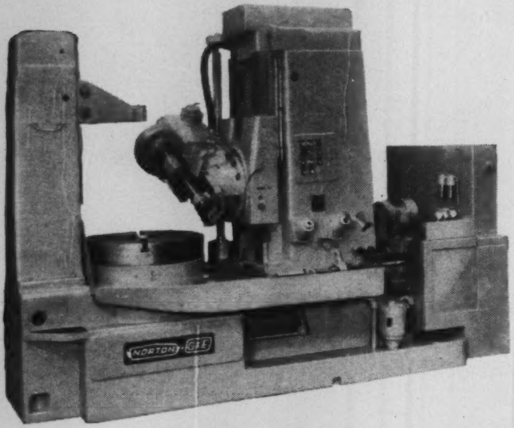
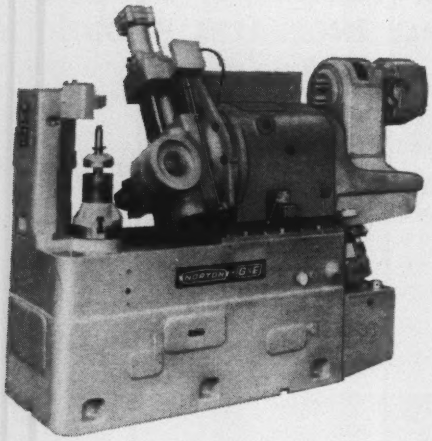
LYtle 1-0309

Plus dealer representatives in other industrial centers.

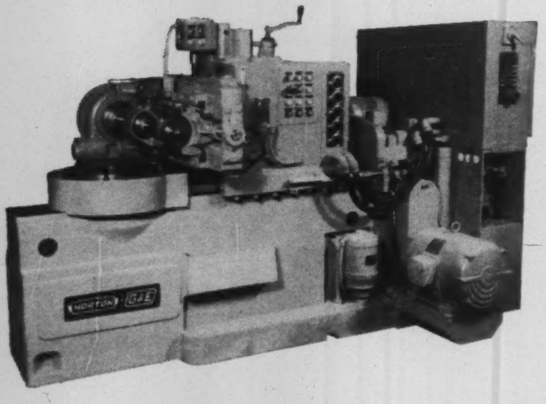
G & E Universal Gear Hobbers are available for commercial and precision production of spur and helical gears, up to 160" diameter.



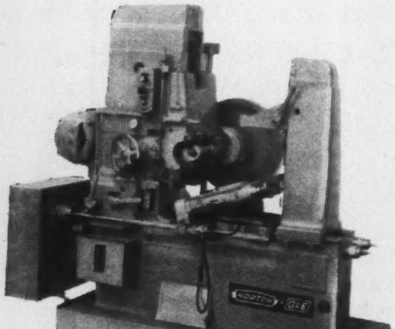
G & E 10HQ HOBLIQUE* Universal Gear Hobber is designed for high speed, high production hobbing of spur and helical gears up to 10" diameter.



Norton Welcomes G & E



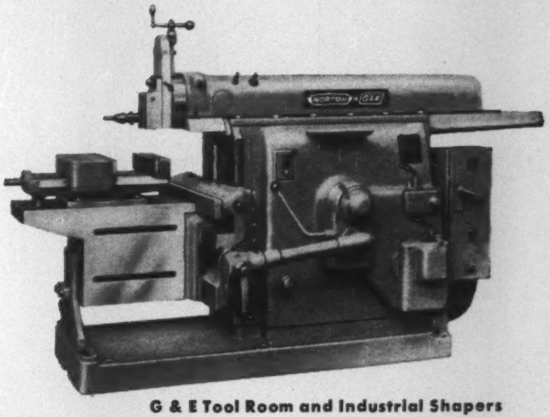
G & E Worm Gear Hobbers are long established leaders for fly tooling or hobbing commercial and precision worm gears up to 100" in diameter.



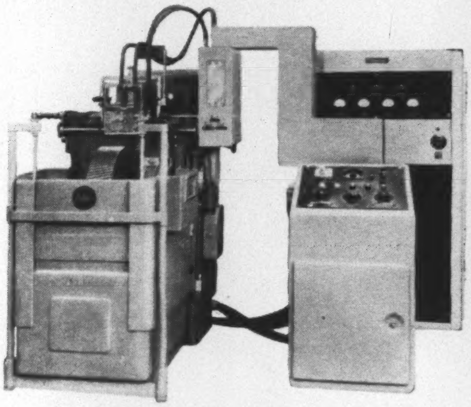
G & E Gear and Rack Cutting Equipment for automatically cutting a diversified range of spur and bevel gears, sprockets and racks.

NORTON PRODUCTS: Abrasives • Grinding Wheels • Machine Tools • Refractories • Electro-Chemicals — **BEHR-MANNING DIVISION:** Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

G & E Delapena COLD HEAT* Gear-Tooth Induction Hardener employs a revolutionary new process for hardening gear tooth profiles. A patented intensifier operating under water, consistently produces a uniform hardness pattern, and reduces distortion to an absolute minimum.



G & E Tool Room and Industrial Shapers meet every requirement for speed, accuracy and compactness on general work. Available in seven sizes from 14" to 36" stroke. Can be equipped with an hydraulic follower attachment.



. . . famous shapers and gear cutting machines join fast growing machine tool family

The addition of the Gould and Eberhardt Division expands capacity and adds a variety of products to the Norton line to serve you better in the Machine Tool field.

The G & E machines shown here are popular leaders in the broad line that will continue in its entirety. Transferal of the manufacture of these machines to Norton headquarters is accompanied by the technical know-how that has made G & E a long established, highly valued supply source of metal cutting equipment.

At Worcester, production of G & E machines is assured the top quality standards that have made Norton the world's largest supplier of grinding machines and lappers.

Norton will be glad to help you select the G & E equipment you need for the results you want. For further information or for G & E parts, write NORTON COMPANY, Gould & Eberhardt Division, Worcester 6, Massachusetts.

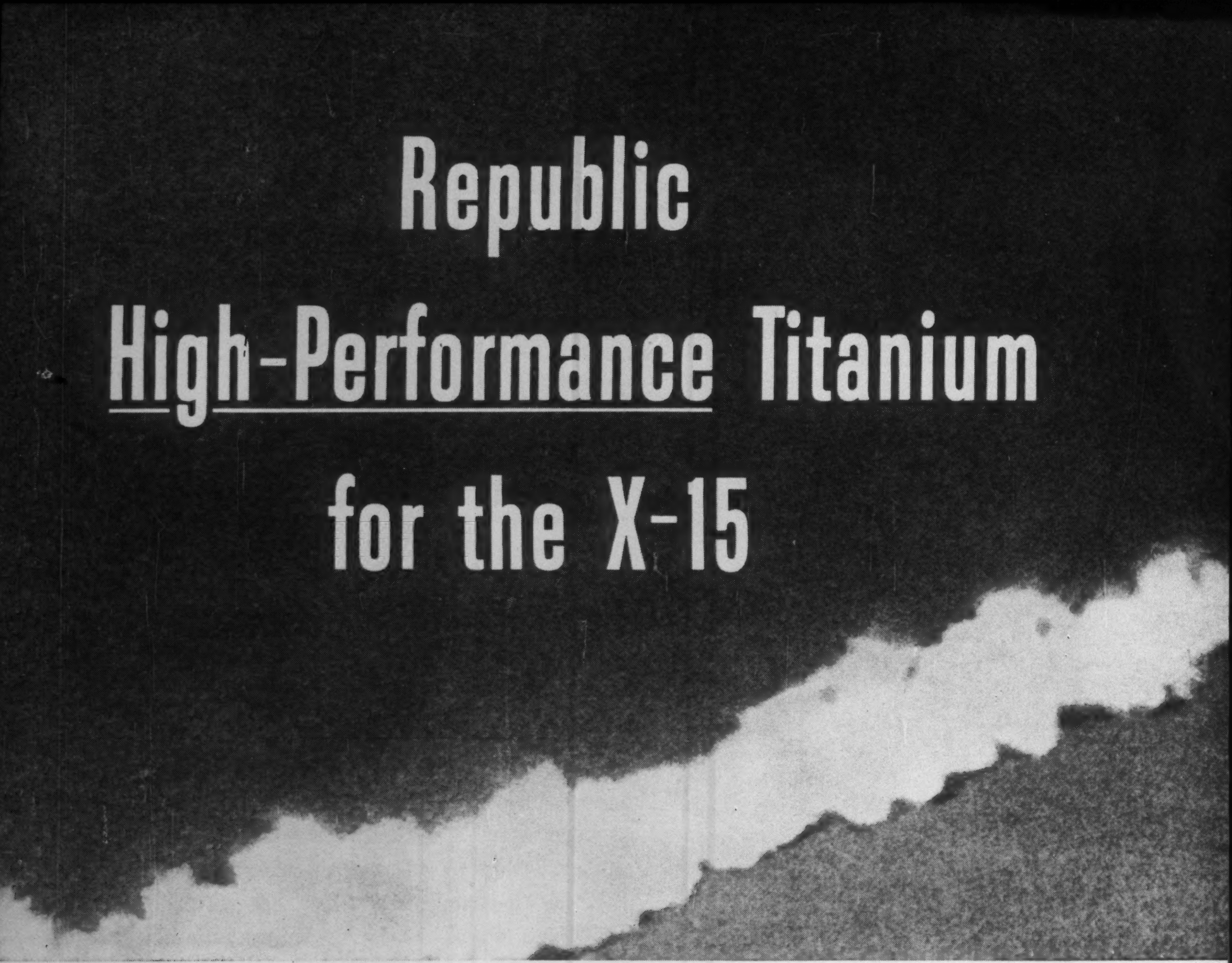
NORTON

MACHINE TOOLS

Making better products

. . . to make your products better

MACHINE TOOL DIVISION: Grinding and Lapping Machines — G & E DIVISION: Shapers • Gear Cutting Machines • Gear Induction Hardeners



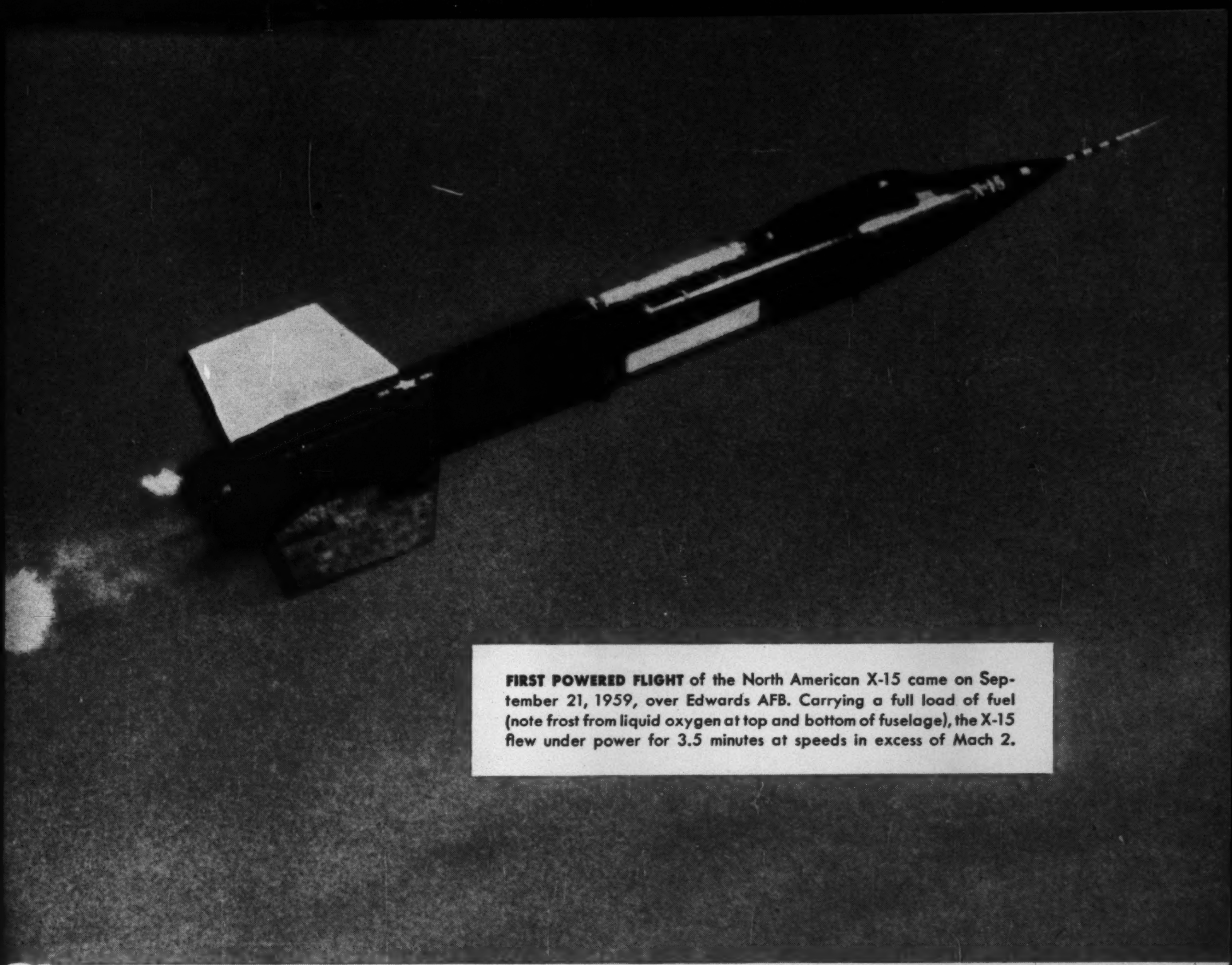
Republic
High-Performance Titanium
for the X-15

In a number of highly stressed components subject to extreme high and low temperature fluctuations, *high-performance* titanium in the X-15 Research Vehicle will help take man higher and faster than he has ever been before.

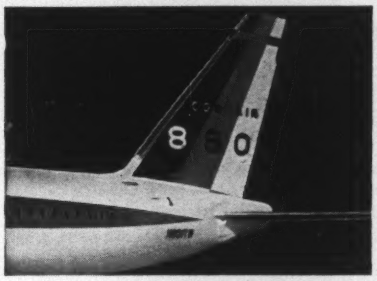
Republic Steel—a leading supplier of titanium, and the nation's largest producer of stainless and alloy steels—is supplying North American Aviation with Type 110A titanium for internal structures on the X-15 project.

Let us help you utilize *high-performance* metals to increase strength, resist heat, or trim weight. Write Republic Steel, Dept. IA -8591,
1441 Republic Building, Cleveland 1, Ohio.
Please indicate if you would like a titanium metallurgist to call.

REPUBLIC STEEL *Where Steels are*



FIRST POWERED FLIGHT of the North American X-15 came on September 21, 1959, over Edwards AFB. Carrying a full load of fuel (note frost from liquid oxygen at top and bottom of fuselage), the X-15 flew under power for 3.5 minutes at speeds in excess of Mach 2.

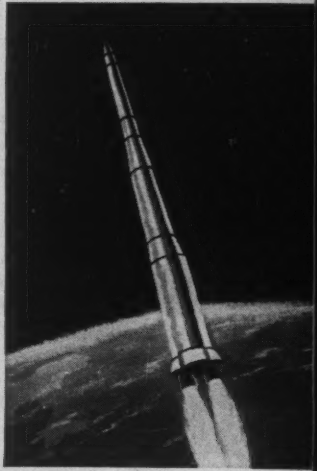


REPUBLIC STAINLESS STEEL is used in leading edges of the Convair 880's vertical fin and horizontal stabilizer where anti-icing is accomplished through electrical heating of the metal. Use of Republic ENDURO® Stainless Steel increases strength and heat-resistance, permits thinner, lighter gages. Types 301 and 302 are readily formed into desired shapes by cold forming, drawing, and bending operations.

REPUBLIC'S NEW HIGH STRENGTH POWDER, TYPE HS6460

is ideal for sinterings of highly stressed components. Provides minimum tensile strength of 60,000 psi at 6.4 density as sintered . . . 100,000 psi after heat treatment. Maximum of .004% shrinkage from die size at 6.4 density. Available in quantities up to and including 12 tons or multiples. Can be used with existing operating equipment.

REPUBLIC VACUUM-MELTED ALLOYS heat treated to tensile strength levels of 270,000 to 300,000 psi are produced in fifteen thousand-pound heats for missiles such as the Minuteman. Vacuum arc process minimizes segregation and center porosity. Nonmetallic inclusions are reduced in number and size. Transverse ductility at high strength levels is also greatly improved.



Made to Meet the Challenge of Acceleration

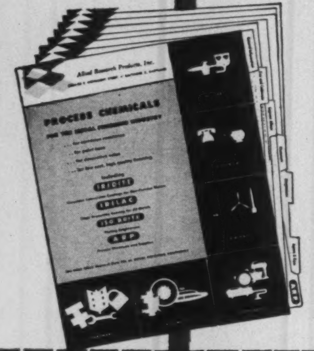
REPUBLIC STEEL

FREE DATA FILES
on
Allied Research
LINES

LOOK FOR THE DIAMONDS—SIGN OF FINISHING QUALITY

METAL FINISHING PROCESSES

A complete line of quality products and processes developed primarily as a result of helping manufacturers like yourself solve their metal finishing problems. If one of our present products does not meet your needs, we'll be glad to work with you to find an answer to your problem.



IRIDITE® Chromate Conversion Coatings for Non-Ferrous Metals.

IRILAC™ Clear Protective Coatings for All Metals.

ISOBRITE® *Chemically Different* Plating Brighteners.

ARP® *Process chemicals.*

EQUIPMENT AND COMPLETE SYSTEMS
for Metal Finishing

Process Engineered—Single pieces of equipment or all equipment necessary for a finishing operation—evaluated, designed, fabricated, installed and tested to match exactly your particular process. Ask about our *Process Engineering Service.*

WAGNER RECTIFIERS

Silicon and Selenium, built to exacting specifications for long life, trouble-free service.

WAGNER AUTO-LOADERS

for fast, economical transfer of racks and parts, conveyors to plating machines, between conveyors.

AUTOMATIC AND SEMI-AUTOMATIC PLATING MACHINES

BARRELS, TANKS and other equipment.

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Prompt service on a wide variety of daily-use necessities for the plating room, delivered from warehouse stocks strategically located in cities in metalworking areas.

FLAT•TOP® ANODES
in copper and zinc.

LECTROCOP® FLAT COPPER ANODES

CADMIUM, WHITE BRASS AND TIN ANODES in most efficient shapes. Acid Replacements, Buffs, Chemicals, Cleaners, Maintenance Materials.

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Ask your Allied Field Engineer about our Subscription Plan which combines your new nickel purchases with a service to recast *your* butts and spears, resulting in substantial savings.

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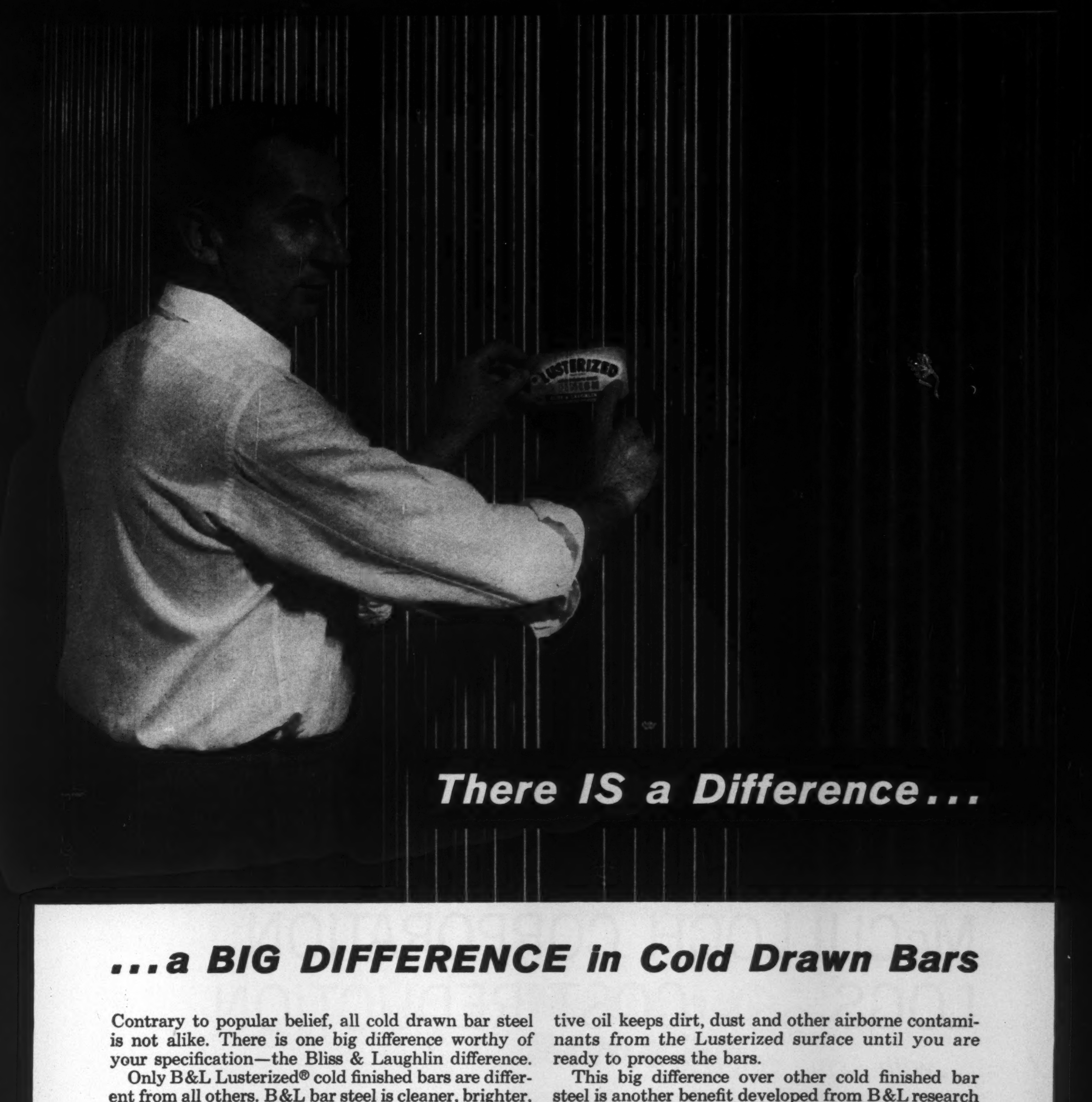


...a BIG DIFFERENCE in Cold Drawn Bars

Contrary to popular belief, all cold drawn bar steel is not alike. There is one big difference worthy of your specification—the Bliss & Laughlin difference.

Only B&L Lusterized® cold finished bars are different from all others. B&L bar steel is cleaner, brighter, easier to handle. The exclusive B&L cold finishing process (patent applied for) removes drawing oils, lime and processing grit, producing a smooth, gleaming bright surface without processing contaminants to slow your production. And B&L special protective oil keeps dirt, dust and other airborne contaminants from the Lusterized surface until you are ready to process the bars.

This big difference over other cold finished bar steel is another benefit developed from B&L research since 1891 to produce better cold finished bars.

You can see the difference. You can work the difference advantageously. Since you pay nothing extra for B&L Lusterized bars, it is always rewarding for you to specify "Bliss & Laughlin Lusterized."

Originators of LUSTERIZED® Finish—The BIG DIFFERENCE in Cold Drawn Bar Steel

BLISS & LAUGHLIN

GENERAL OFFICES: Harvey, Ill. • PLANTS: Harvey, Detroit, Buffalo, Mansfield, Mass.

*Specialists in
Finish, Accuracy,
Straightness, Strength
and Machinability*

NATIONAL ACME'S "ZONE OF RESPONSIBILITY" INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS . . . Then Check National Acme

Direct Costs: these include direct dollar savings as realized by the McCulloch Corporation . . . an "every day" job for Acme-Gridleys.

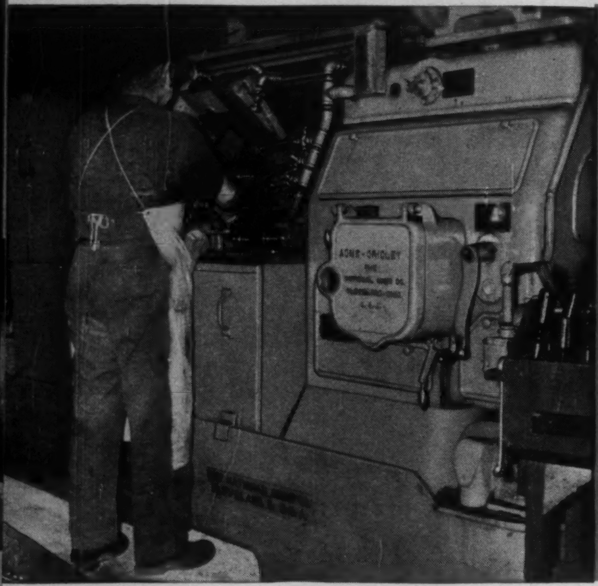
Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

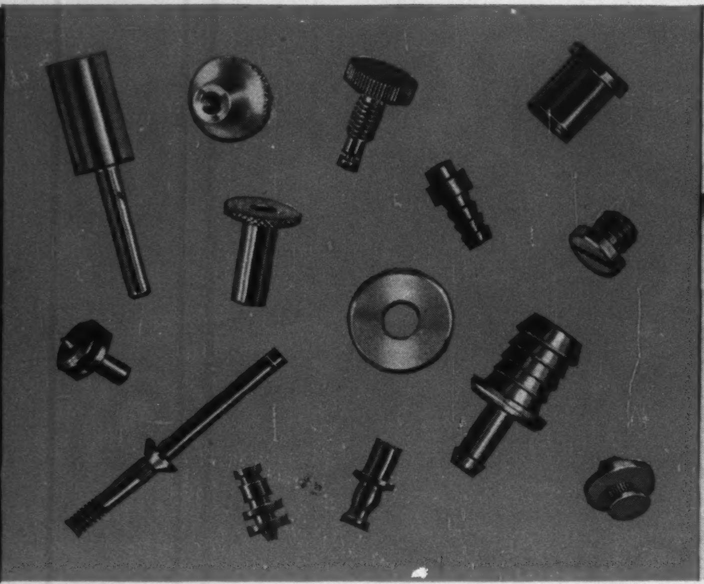
Product Redesign: teaming with your design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

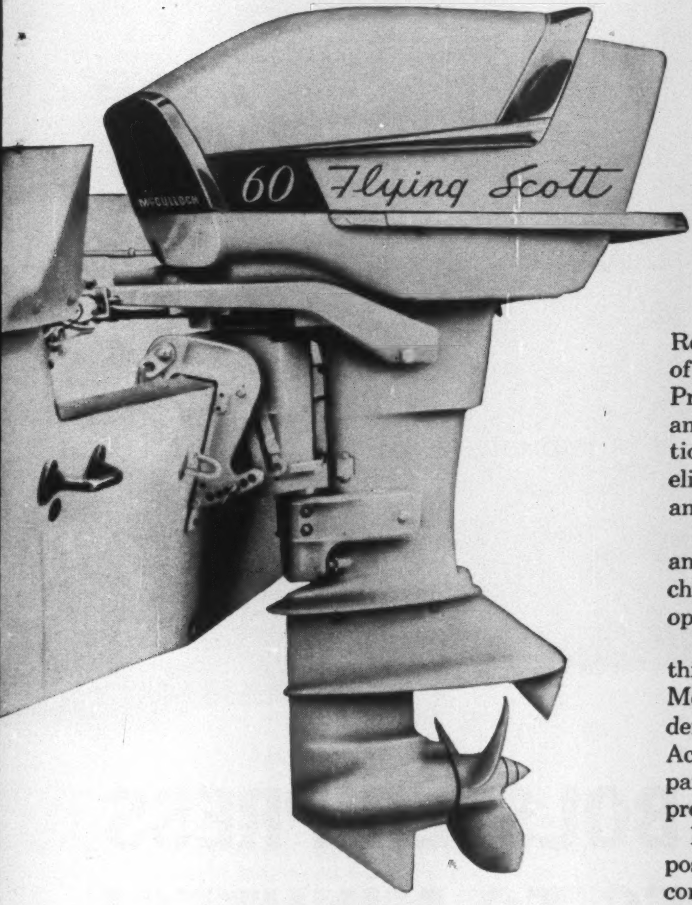
Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.





McCULLOCH CORPORATION LOGS 66% COST REDUCTION

. . . with Acme-Gridleys


McCULLOCH
60 Flying Scott

Reduced cost-per-piece of tilt-lock knobs was but one of the enviable savings made possible for the Marine Products Division of the McCulloch Corporation by an Acme-Gridley RA-6 Spindle Automatic. In addition, McCulloch boosted output 200%, practically eliminated scrap losses, and greatly improved finish and final appearance of this small but critical part.

Previous production methods required one primary and two secondary operations. Now, complete machining—including deburring, is done in one automatic operation on the Acme-Gridley.

Dramatic savings in the production of parts like this make Acme-Gridleys a vital, cost-saving cog in McCulloch's highly efficient production set-up. Evidence of this leading manufacturer's high regard for Acme-Gridley efficiency is the fact that 14 different parts for their popular 60HP "Flying Scott" are produced on the rugged, versatile RA-6 Automatic.

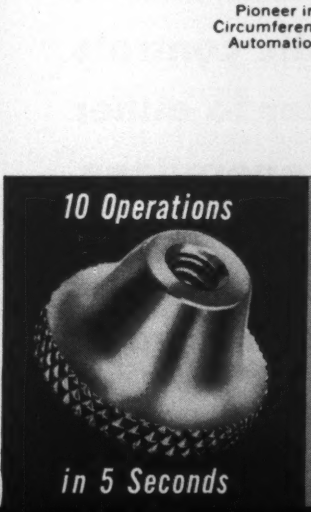
It will pay you to thoroughly study the savings possible with Acme-Gridleys. Call, write or wire for complete details on industry's most modern approach to tangible cost reduction.

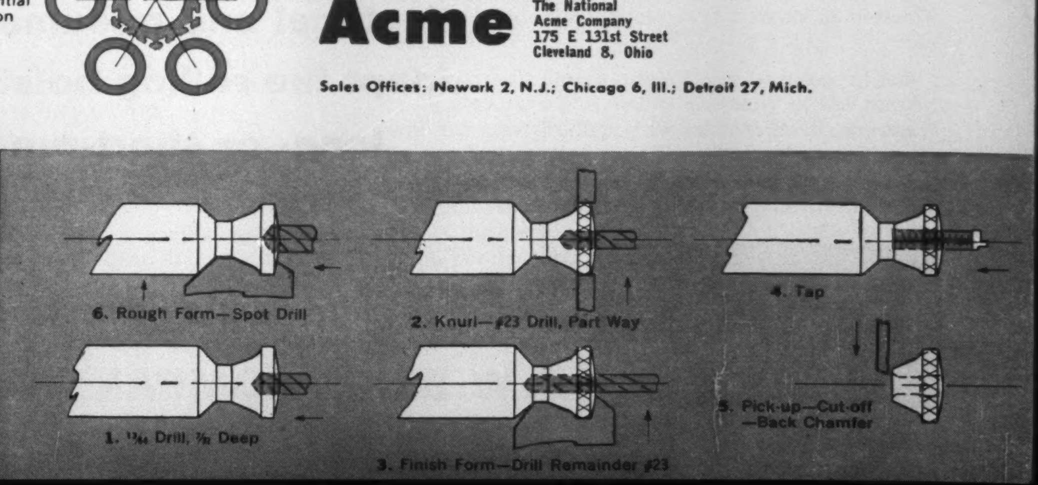
Pioneer in
Circumferential
Automation

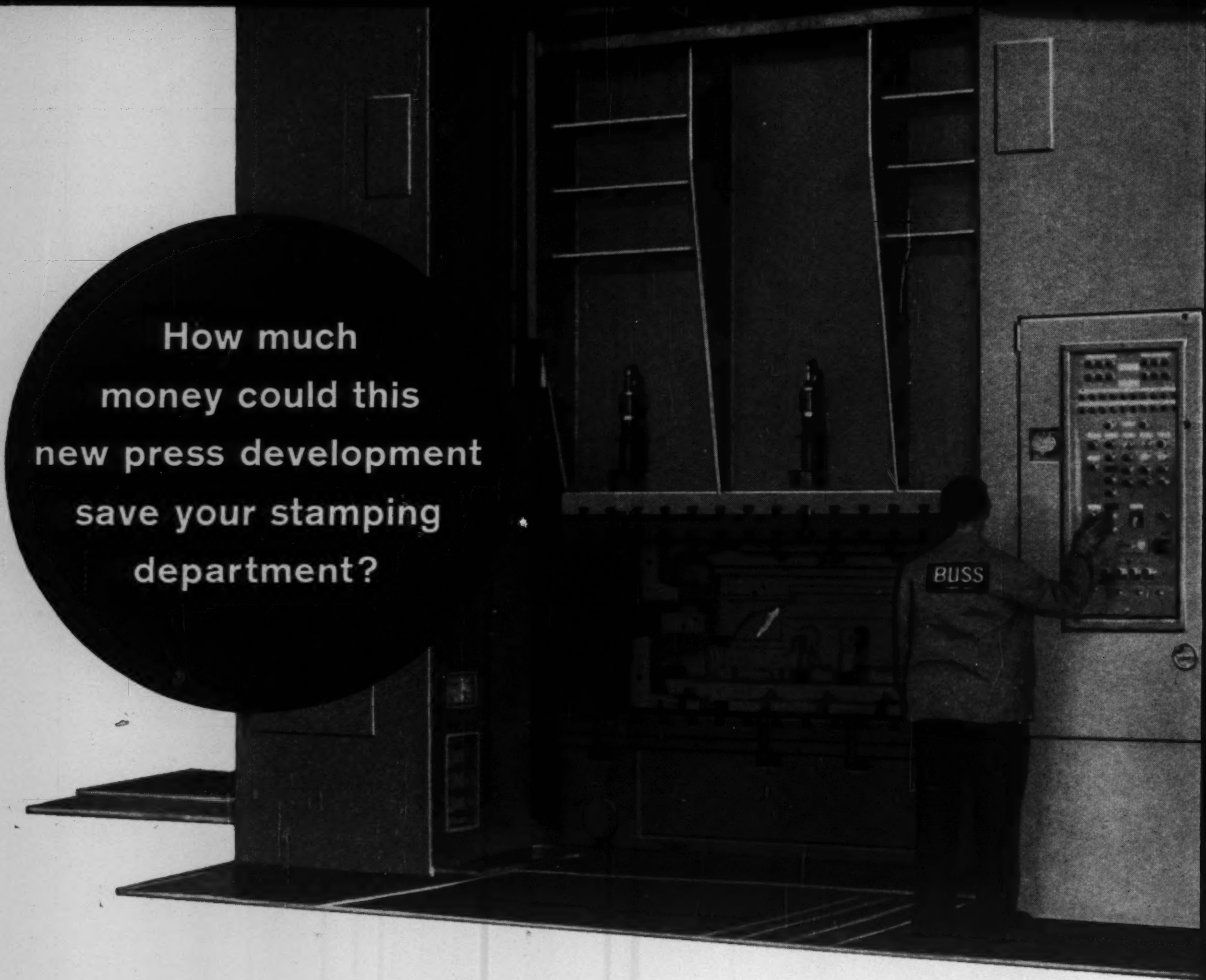
National Acme

The National
Acme Company
175 E 131st Street
Cleveland 8, Ohio

Sales Offices: Newark 2, N.J.; Chicago 6, Ill.; Detroit 27, Mich.


10 Operations
in 5 Seconds


6. Rough Form—Spot Drill
2. Knurl—#23 Drill, Part Way
4. Tap
1. 13/64 Drill, 7/8 Deep
3. Finish Form—Drill Remainder #23
5. Pick-up—Cut-off
—Back Chamfer



How much
money could this
new press development
save your stamping
department?

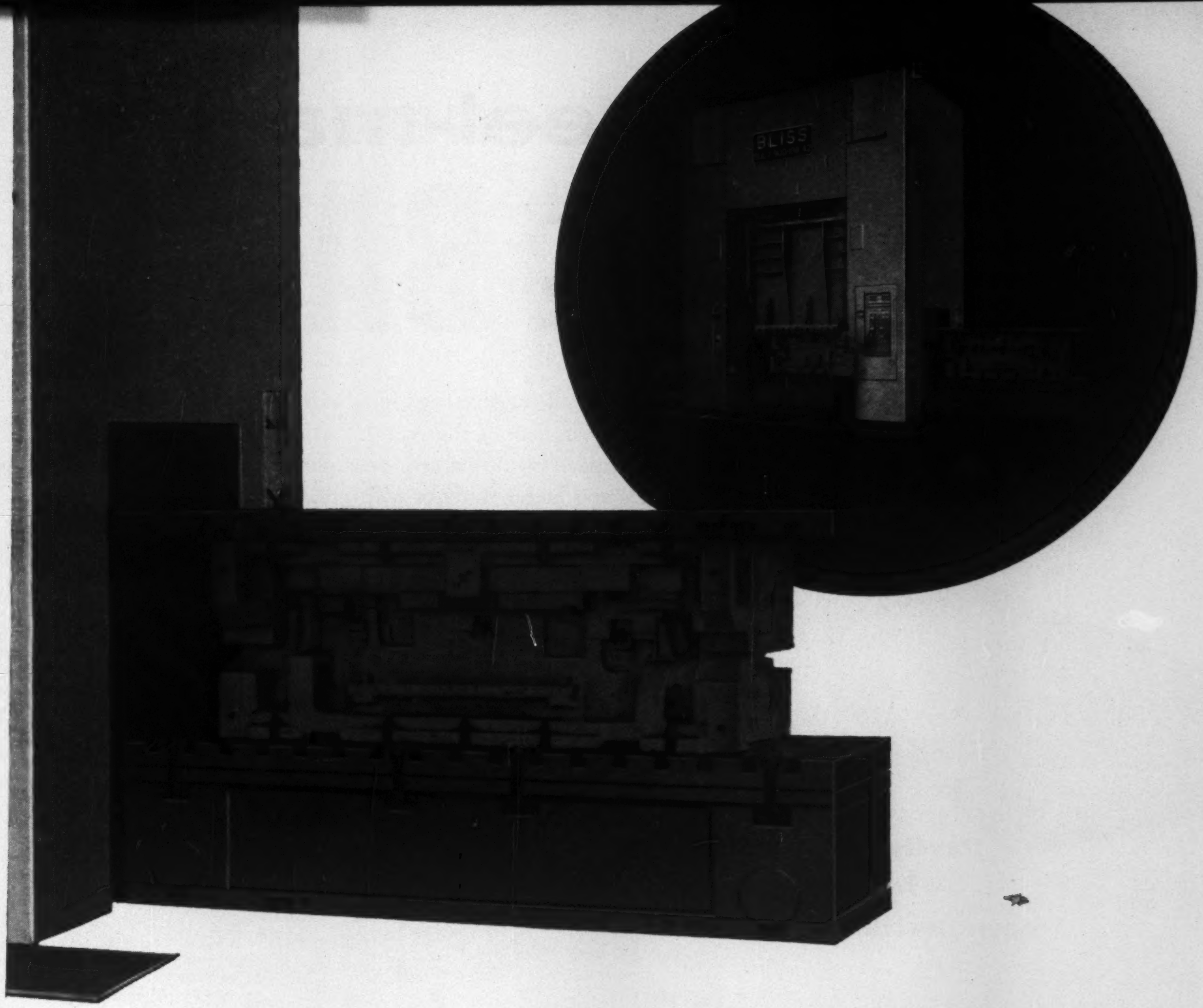
BLISS ROLLING BOLSTER PRESS CUTS DIE CHANGES TO MINUTES!

Get the most from each man hour... electrical and pneumatic controls adapt the rolling bolster to either long- or short-run operations.

BLISS
SINCE 1857 ®

BLISS is more than a name... it's a guarantee

E. W. BLISS COMPANY, Canton, Ohio



Hailed as the longest step forward in large press design in the last twenty years, the new Bliss rolling bolster press outproduces an equivalent straight side press by a ratio of 1¾-to-1. It raises press efficiency—the percent of the time the press is actually producing stampings—from an average of 40% to better than 90% of every working hour. More than twenty are already on order!

The new Bliss rolling bolster presses are far more than straight sides with something added. They have been redesigned throughout for high-speed operation. Some of their special features:

Automatic die clamps ... driven by a push-button controlled torque motor. Six threaded T-bolts clamp or unclamp the dies in seconds. Electric interlocks protect the dies and press from damage.

Automatic ram positioner ... positions ram electronically to any desired shutheight within .0015". It's fast and simple ... you set the dials and push the button.

Hydraulic overload protection ... guards against die damage. Press overload releases oil in unique system under pressure equal to a preset capacity. Press stops, warning lights flash.

Simplified gear train ... has only four gears, fewer than any other underdrive press. This extremely low inertial load permits a very high tripping rate with minimum clutch wear.

Demountable gear case ... comes off as a single unit, exposing all drive gears, clutch, brake and flywheel. Cuts hours from maintenance.

Link type press drive ... develops extremely high mechanical advantage through links, rock shafts and pulldown rods. Rock shafts rock to within 5° of vertical alignment, eliminating press sticking at bottom dead center.

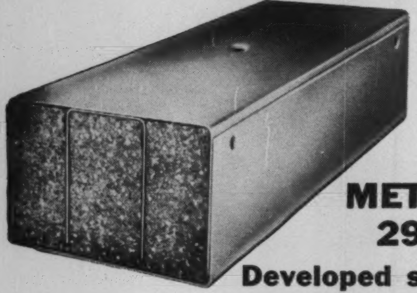
These overall design advantages and special features may save you money on many of the parts you are now producing on conventional presses. In total, they make up the most advanced and productive straight side presses ever developed... just one more result of Bliss' constant effort to design equipment to cut production costs to the bone. For detailed information, write us today.

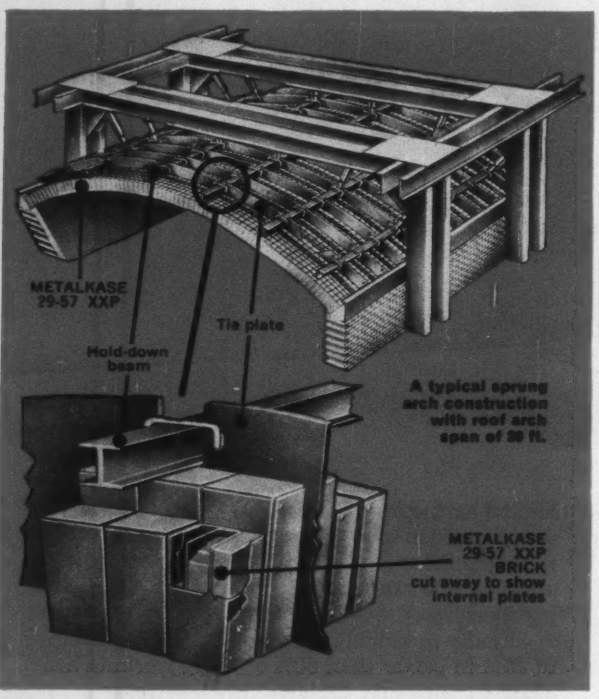
PRESSES · ROLLING MILLS · ROLLS · DIE SETS · CONTAINER MACHINERY · CONTRACT MFG.

Steel-making

HARBISON-WALKER BASIC

Deviation from the conventional with Harbison-Walker specialized basic refractories is necessary to lead the way to reality in the commercial accomplishment of the ALL-INCLUSIVE, ALL-BASIC open hearth steel furnace. These products most economically withstand the ever-increasing severity of operating conditions including higher temperatures and larger furnaces with greater rates of production, accompanied by the use of oxygen with its important benefits.




METALKASE 29-57 XXP
Tie plate
Hold-down beam
METALKASE 29-57 XXP BRICK cut away to show internal plates

A typical sprung arch construction with roof arch span of 28 ft.

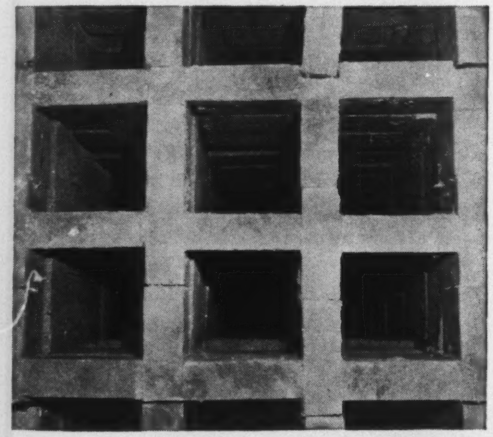
METALKASE 29-57 XXP

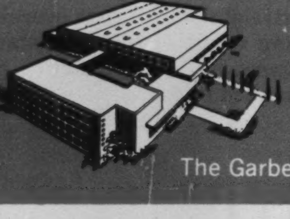
Developed specifically for service in the open hearth furnace roof.

METALKASE 29-57 XXP internally plated metal-encased brick, used in both sprung and suspended arch constructions of all designs, continues making service records at many steel plants. The high purity magnesia, produced by Harbison-Walker from Michigan brines and stabilized as dense periclase, is a major constituent which measurably enhances the desirable properties of this refractory.

FORSTERITE L CHECKERS

Forsterite L is best among basic refractories for checker settings of open hearth regenerators. Properties of particular merit for this application are: resistance to fluxing, volume stability and strength at high temperatures, and relatively great heat capacity.





Leadership in refractories through constant research

The Garber Research Center

achievements with
REFRACTORIES

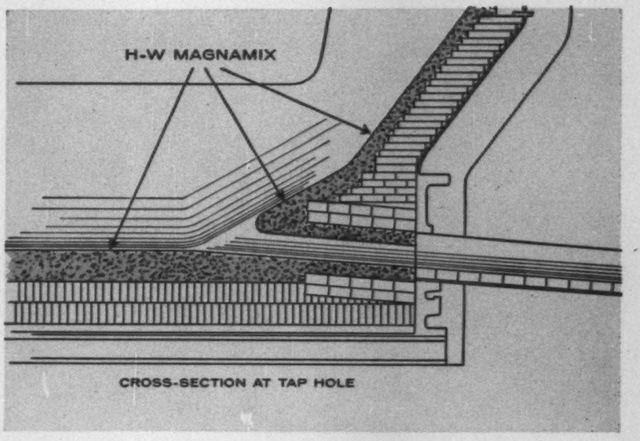
Widely-used basic refractories which are important contributors to the success of the all-basic furnace are briefly enumerated:

METALKASE, the original chemically-bonded magnesite chrome brick, steel-encased on four sides, gives superior service in front walls.

CHROMEX B is a chrome-magnesite brick having excellent volume stability and great high-temperature strength resulting from extremely hard firing. It is used with special benefit for front walls, back walls and suspended sections of the port ends.

H-W C-MIX (high purity seawater periclase) used for contour-rammed open hearth and electric furnace bottoms, greatly reduces furnace downtime, saves labor and avoids burning-in sacrifice of refractory superstructure.

H-W PERIKLASE is an exceedingly hard-fired high-magnesia brick consisting predominantly of the mineral periclase in the most stable crystalline form. It is unusually resistant to hydration and is particularly adapted for open hearth sub-bottoms.



CROSS-SECTION AT TAP HOLE

H-W MAGNAMIX, a pioneer among high-magnesia ramming mixtures, is used for monolithic bottoms. It is especially suited for both hot and cold maintenance and for repiping tap holes.

IN BASIC OXYGEN FURNACES, HARBISON-WALKER unique basic refractories set production records

H-W 17-56 is the special tar bonded basic brick which forms the complete working linings of these oxygen vessels.

H-W AMC magnesite brick laid with strong-setting H-W PERIKLASE BONDING MORTAR forms the protective lining against the shell.

H-W OXIMIX is the basic ramming mix which forms both the monolithic hearth of the furnace and the intermediate monolith between the H-W 17-56 working lining and the H-W AMC magnesite brick.

The wide preference for these refractories is attributable to their high tonnage records, which continue to increase, with resultant reduced costs per ton of steel.

HARBISON-WALKER REFRACTORIES COMPANY

AND SUBSIDIARIES **GENERAL OFFICES: PITTSBURGH 22, PENNA.**

World's Most Complete Refractories Service

more and more, Olin Aluminum gleams on America's prestige cars

Grilles and trim that proclaim the elegance and enhance the sweeping lines of America's fine cars — these reflect Detroit's growing reliance on Olin Aluminum. High-precision extrusions . . . alloys and finishes of impeccable quality and uniformity . . . shipping schedules synchronized with assembly-line requirements — these are Olin Aluminum's contribution to 1960's prestige cars. Expect no less when you order from Olin Aluminum. Whether you make cars or casseroles, trailers or tumblers, boats or blinds — your orders get V.I.P. attention. Always.

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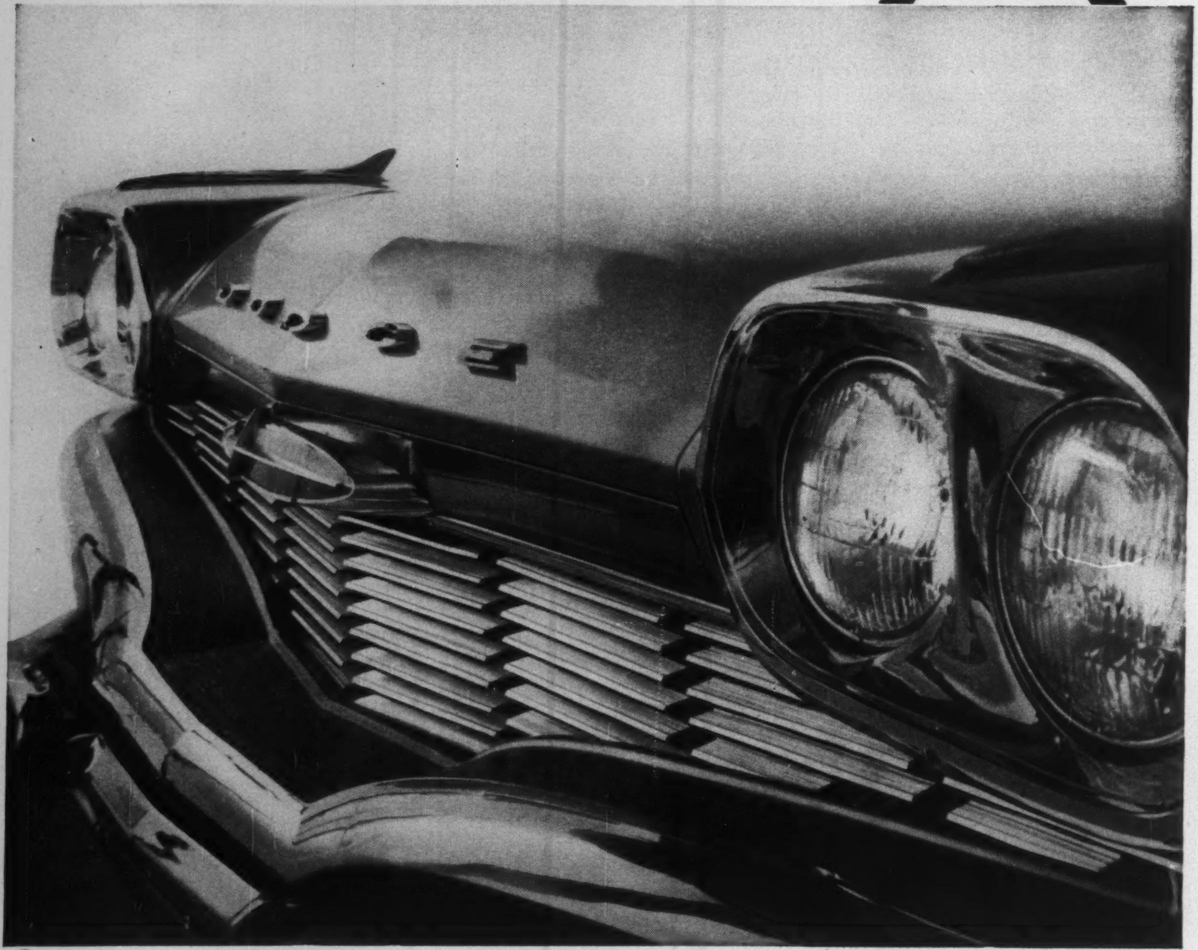
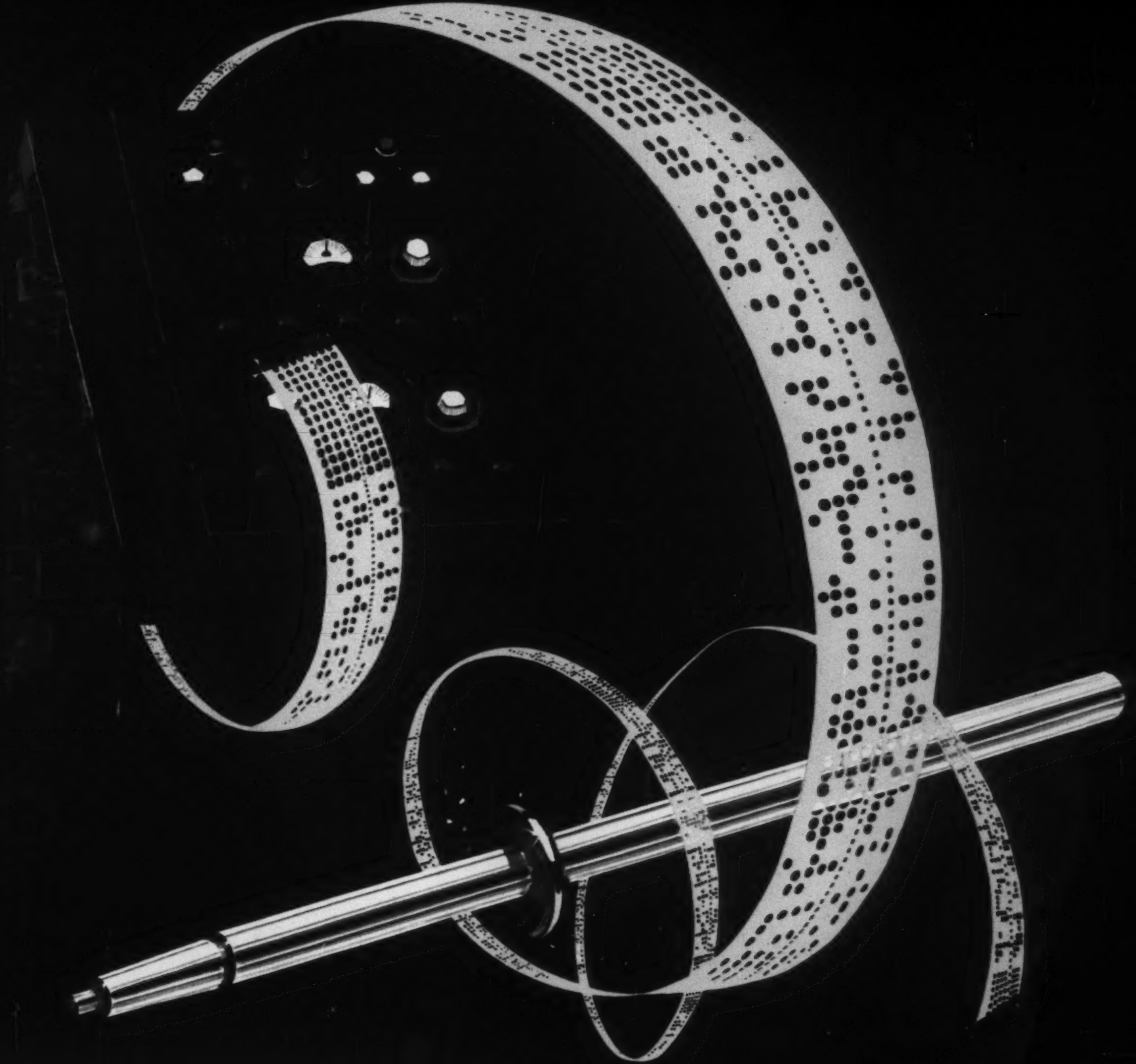
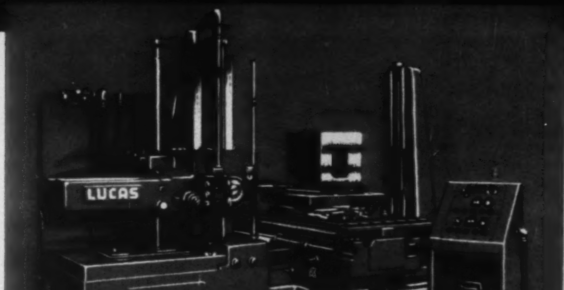
OLIN
ALUMINUM
®

GRILLE FOR THE EXCITING NEW DODGE FABRICATED BY RYERSON-HAYNES, WORKING WITH OLIN ALUMINUM EXTRUSIONS.



OLIN MATHIESON · METALS DIVISION · 400 PARK AVENUE, NEW YORK 22, N. Y.

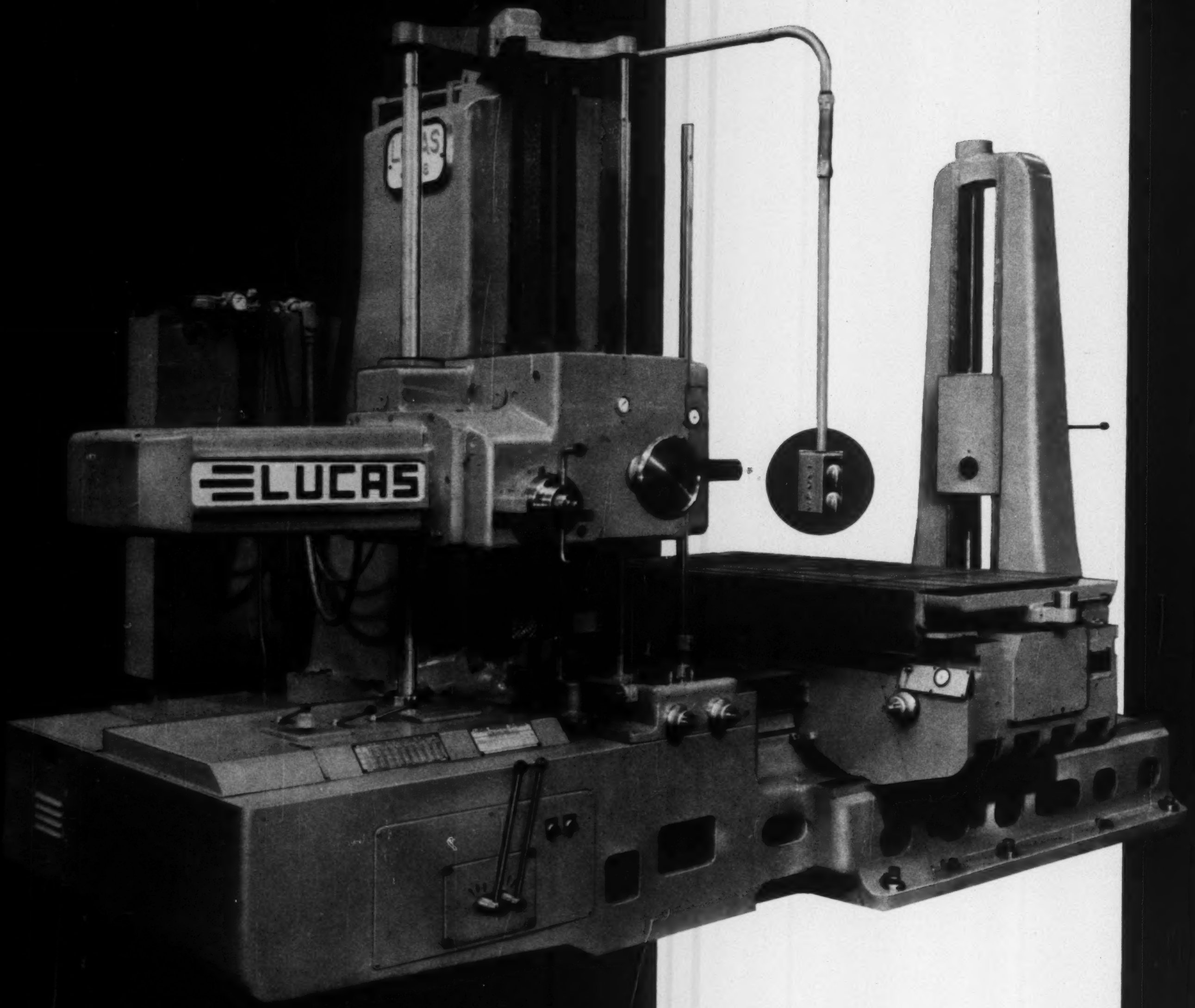




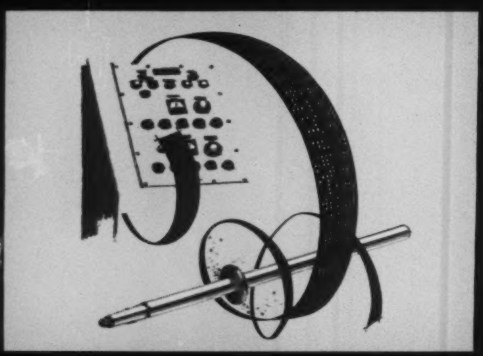
Tape control...
certainly!

Tape control can readily be applied to any Lucas model, (2 3/4" to 6" diameter spindles) if repetitive operations or complicated one-of-a-kind jobs make this new development advantageous. Lucas tape controlled machines are available with punched tape for N.P.C., magnetic tape for contouring, or tape and tracer control. If you have a profitable use for *any* type or size of horizontal boring, drilling and milling machine (up to 6" spindle capacity) you can get it at its best from the specialist in this type of machine. *Did you ever meet a man who regretted picking a Lucas?*

LUCAS
OF CLEVELAND

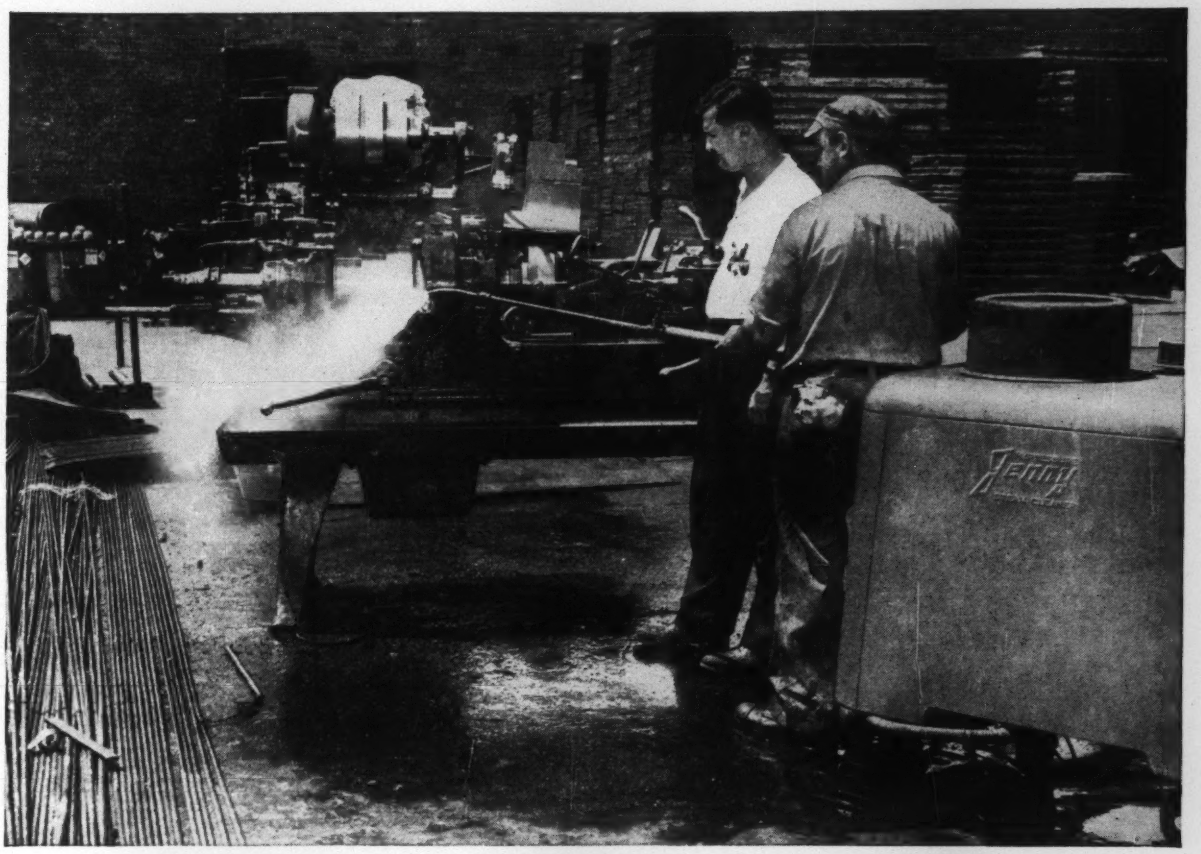


Simplified pendant controls . . .



A Lucas performs the greatest variety of operations possible in any machine tool. Standard models permit control of *all* operations from the pendant. Optional pendant and lever control machines, like the one shown above, combine a simplified pendant with readily accessible levers. Whichever type of control you want—pendant, lever, tape, tracer or any of these in combination—Lucas has it.

LUCAS
OF CLEVELAND



Jenny® Removes 25 Years of Grime– Slashes Tool Reconditioning Time!

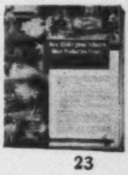
To remove 25 years' accumulation of dirt, grime, and grease from 200 metal working and forming tools, was the problem faced by Mr. John Radzak, Production Manager, Universal Form Clamp Co., Chicago. After trying numerous methods, Hypressure Jenny Steam Cleaner was chosen as the most thorough and economical means of doing the job.

Typical of Jenny's speed and savings was the fact that it cleaned a 100-ton punch press in six hours, as compared with 10 man-days required previously by hand-cleaning methods.

Now, Jenny is used in the company's plant housekeeping program, and it has helped to establish them as one of the cleanest and safest plants in the country.

It will pay you well in profits, production and worker morale to make Jenny the keystone of *your* maintenance and reconditioning programs. With a choice from more than 50 different models of Jenny, including all-electric, oil-fired, or gas-fired types, and ranging in capacity from 35 to 360 gallons per hour, you are sure to get the best Jenny for your cleaning jobs.

Mail the coupon today for additional facts or free demonstration. You'll be glad you did!



23

☐ Please arrange to demonstrate a Jenny.

☐ Send additional information.

Name ....Title ....

Company ....

Address ....

City ....Zone......State ....

hv

HOMESTEAD VALVE MANUFACTURING COMPANY

Hypressure Jenny Division—Coraopolis, Pa.
(In Canada: Hypressure Jenny Sales & Service, Ltd.,
517 Jarvis Street, Toronto 5, Ont. C.S.A. Approved)

CF&I WIRE...

PACKAGED for YOUR PRODUCTION

Reels
(500-800 lbs. capacity)

Disposable Spools
(5-70 lbs. capacity)

Reel-Less Core
(800-1000 lbs.capacity)

Fibre Drum
(250-600 lbs. capacity)

Standard Coils, paper-wrapped,
steel-strapped or wire-tied.

This giant steelman – Image of CF&I – stands for the wire that will make more money for you on your production line. In instance after instance, all across the country, manufacturers have reported cutting hours off daily downtime . . . easing storage and handling problems . . . *increasing production as much as 50%* . . . after they started using CF&I Steel Wire – *Packaged For Production.*

Such a record is possible because all CF&I Wire is specifically packaged to give one, or several, special production benefits. For extra hours of uninterrupted production, CF&I has jumbo-sized reels, coils and spools. New STEM-PAKS® and returnable Spiders are especially useful for continuous operations. The smaller Standard Coils and Disposable Spools are easy to handle and store, quick to put in operation. Fibre Drums and paper-wrapped coils are available when wire cleanliness is critical.

CF&I, pioneer in wire packaging, makes wire in a wide range of gages and finishes. Whatever your needs, CF&I can fill them. Call your nearest sales office for full details on the wire that's *Packaged For Your Production.*

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

CF&I
STEEL

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CF&I OFFICE IN CANADA: Montreal • **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

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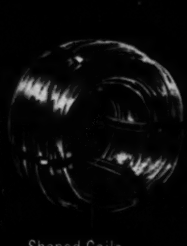
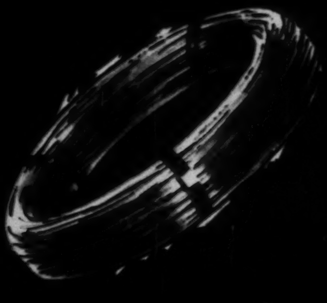
Steel-strapped
Wooden Racks



Shaped Coils
(1500-2500 lbs. capacity)

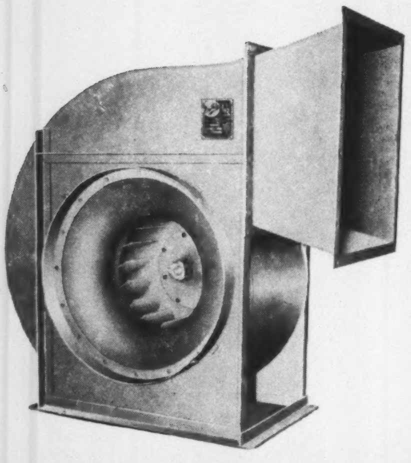
Stem-paks®
(500-1000 lbs. capacity)

Returnable Spiders
(2000-3000 lbs. capacity)

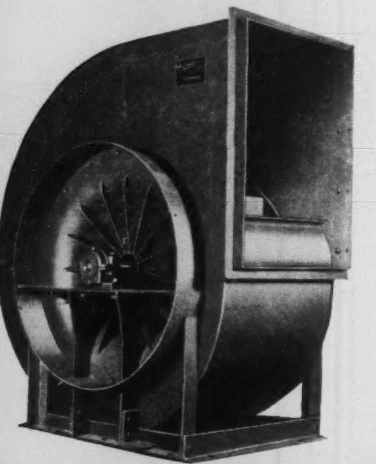


Steel-strapped Coils
(200-2000 lbs. capacity)

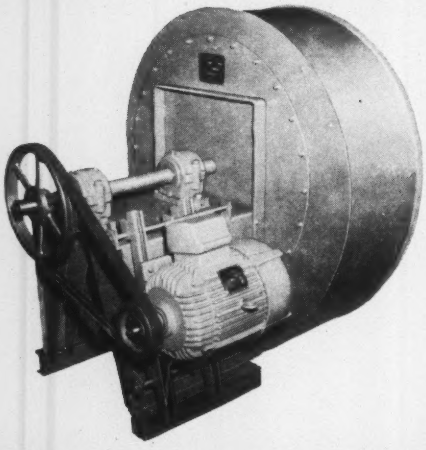
Realize the Lower Cost of Quality Fans



"Buffalo" Type "CR" Fan



"Buffalo" Type "BL" Fan



"Buffalo" Industrial Exhauster

Without a doubt — the dependable performance of quality built fans pays off in longer, more effective, trouble-free service. At Buffalo, we call this the "Q" factor . . . the highest quality you can get. Here are 3 examples of what this can mean to you . . .

For supplying moderate pressure ventilating, air conditioning and air cleaning systems, the "Buffalo" Type "BL" Fan is ideal. From inlet through wheel to housing, the "BL" is engineered for quiet, efficient, economical operation. The "Buffalo" designed non-overloading characteristic assures stable output from free delivery to shutoff. Buffalo's traditional durable construction assures long, maintenance-free life. Capacities to 500,000 cfm. Write for Bulletin F-104.

For severe industrial service the "Buffalo" Type "CR" Fan is unsurpassed. Fan efficiency is increased by the same design factors that reduce wear to a minimum. A unique radial blade plus maximum streamlining through the entire fan accomplishes this dual purpose. Long, productive fan life is assured by Buffalo's extra-heavy duty construction throughout. For full details, write for Bulletin FD-205.

For rugged air and material moving jobs you can rely on "Buffalo" Industrial Exhausters. Special units will move hot gases from 200° F. to 850° F. For handling corrosive fumes, actual users prove that "Buffalo" Rubber-Lined Exhausters will outlast standard metal fans as much as twelve to one. Efficient material wheels are available for moving emery dust, saw dust, chips, long shavings and many other materials. There's a "Buffalo" Industrial Exhauster to fit your "tough" application. Write for Bulletin FI-110.

For full information on these and every type "Buffalo" Fan, call in your nearest "Buffalo" Representative. Or write us direct, outlining your air moving problems.

BUFFALO FORGE COMPANY
Buffalo, N. Y.
Buffalo Pumps Division Buffalo, N. Y.
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VENTILATING • AIR CLEANING • AIR TEMPERING • INDUCED DRAFT • EXHAUSTING • FORCED DRAFT • COOLING • HEATING • PRESSURE BLOWING

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at Florida Electric Steel Mill
TAMPA, FLORIDA

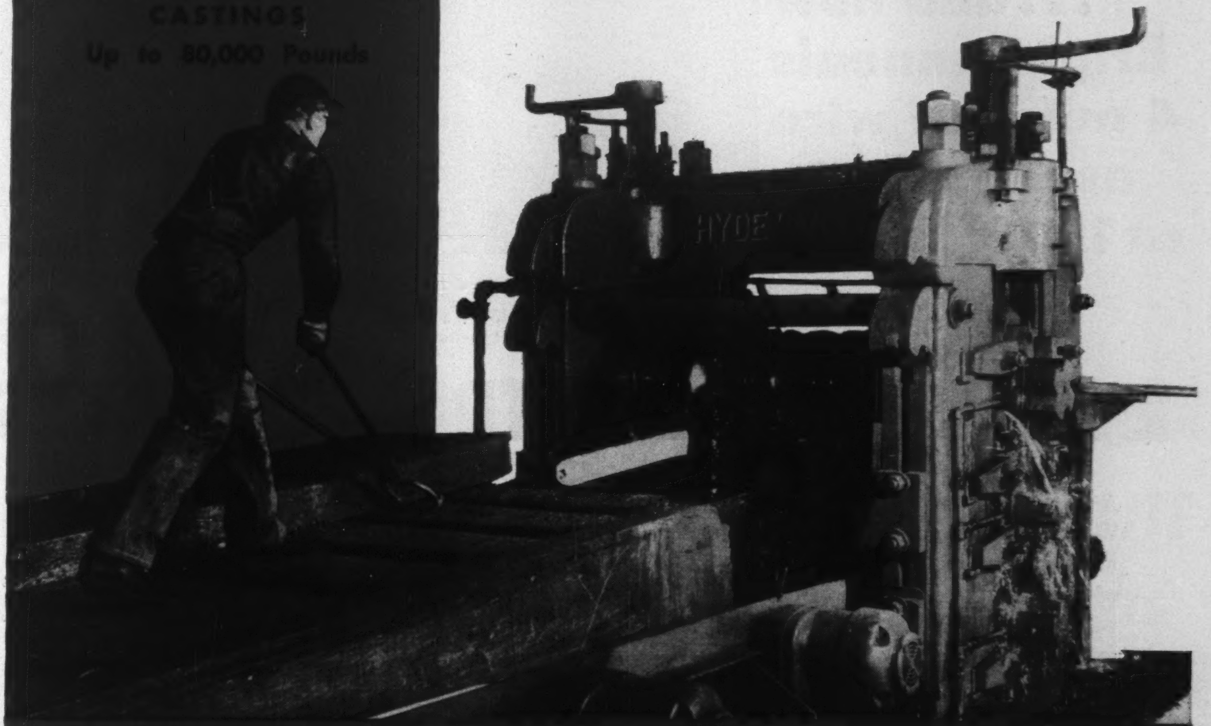
GRAY IRON and ALLOY IRON CASTINGS
Up to 80,000 Pounds

For 65 years, Hyde Park Foundry and Machine Company has been developing, designing and manufacturing rolls, rolling mills and auxiliary equipment for steel mills, everywhere.

The "Red Circle" is your guarantee of quality. You will find it on every roll. It is symbolic of the highest integrity and efficient performance of all Hyde Park rolling mill equipment.

Hyde Park Engineers are always ready to co-operate with you in selecting and applying the rolls and equipment best suited to your operation.

Our Foundry and Machine Shop facilities are equal to any of your requirements.



Photograph showing Hyde Park 18" 3-Hi Bar Mill Stand at Florida Electric Steel Mill, Tampa, Florida.

500 TON LEVELLER

50" ROLL LATHE

ROLLS

- Nickel Alloy Grain Rolls
- Grain Rolls
- Chilled Rolls
- Nickel Chilled Rolls
- Moly Rolls
- Nodular Iron Rolls

All Grades Nickel Alloy Iron Rolls for Hot and Cold Rolling

ROLLING MILL EQUIPMENT

- Bar Mills
- Merchant Mills
- Roller Tables
- Stretcher Levellers
- Sheet Mill Shears
- Special Machinery
- Sheet and Strip Mills
- Pinion Stands
- Reduction Drives
- Roll Lathes
- Machine Work

CASTINGS

- Furnace Castings
- Heavy Die Castings
- Bases
- Housings
- Machinery Castings
- Slag Pots
- Heavy Tool Castings
- Floor Plates

RED CIRCLE Rolls ALLOY-CHILLED

RC

Hyde Park

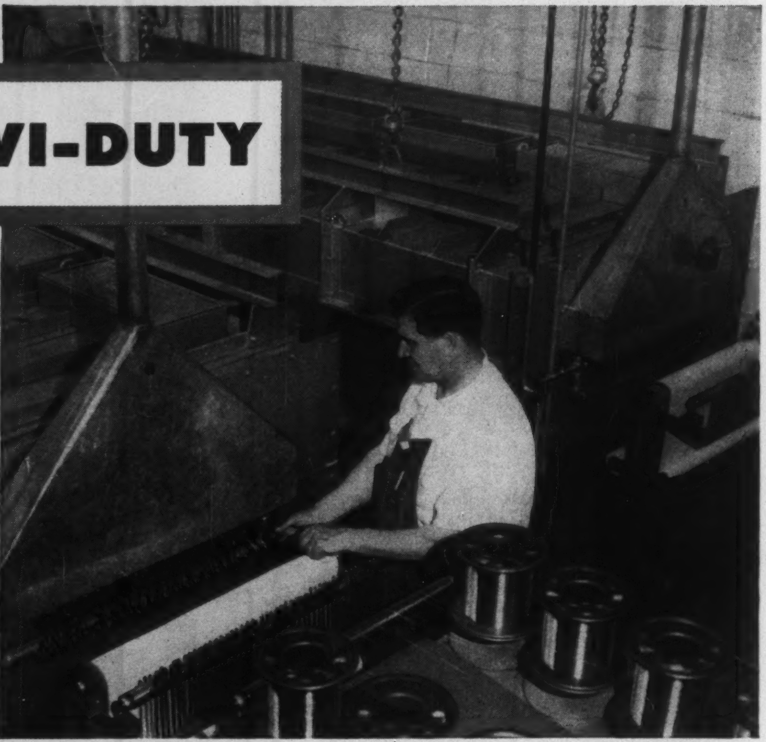
FOUNDRY and MACHINE CO.

HYDE PARK, WESTMORELAND COUNTY, PITTSBURGH DISTRICT, PA.

Ask **HEVI-DUTY**

...Appleton Wire Works Corp. did

...and now bright anneals 4 miles of wire every minute at 1500° F. with



Two Hevi-Duty strand annealing furnaces, each with 40 alloy tubes and three zones of temperature control, produce up to 22,000 ft. of quality brass and bronze wire per minute at temperatures to 1500° F. at the Appleton Wire Works Corp., Appleton, Wis. Each electric annealing furnace is used 24 hours per day and five days a week.

2 HEVI-DUTY ELECTRIC FURNACES

At the Appleton Wire Works Corp., Appleton, Wisconsin, two Hevi-Duty electric strand annealing furnaces bright anneal up to 22,000 ft. of brass and bronze wire per minute at temperatures to 1500° F. The wire is used in the weaving of wire cloth for the paper and pulp industry.

Designed for maximum operating temperatures of 2000° F., each Hevi-Duty furnace has 40 alloy tubes through which the wires pass, and three zones of temperature control. Wire is annealed under a dissociated ammonia atmosphere.

These Hevi-Duty furnaces are in operation 120 hours per week, and this company reports significantly low operating costs. Temperature uniformity of ±5° F. along the heated length of all tubes has extended tube life by eliminating hot and cold spots.

Like Appleton Wire Works Corp., you too, can boost production, realize lower operating costs, and obtain temperature uniformity and rapid, easy temperature control with Hevi-Duty furnaces.

On any heat processing problem, contact Hevi-Duty. Call or write today.

ASK HEVI-DUTY
for more information on electric or fuel fired heat treating furnaces. Write for Bulletin 653A for full details.

HEVI-DUTY

BP
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A DIVISION OF BASIC PRODUCTS CORPORATION

HEVI-DUTY ELECTRIC COMPANY, MILWAUKEE 1, WISCONSIN
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Available in a variety of belts, flap wheels, discs, cones, and other specialties.

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TROY, NEW YORK
A DIVISION OF NORTON COMPANY NORTON

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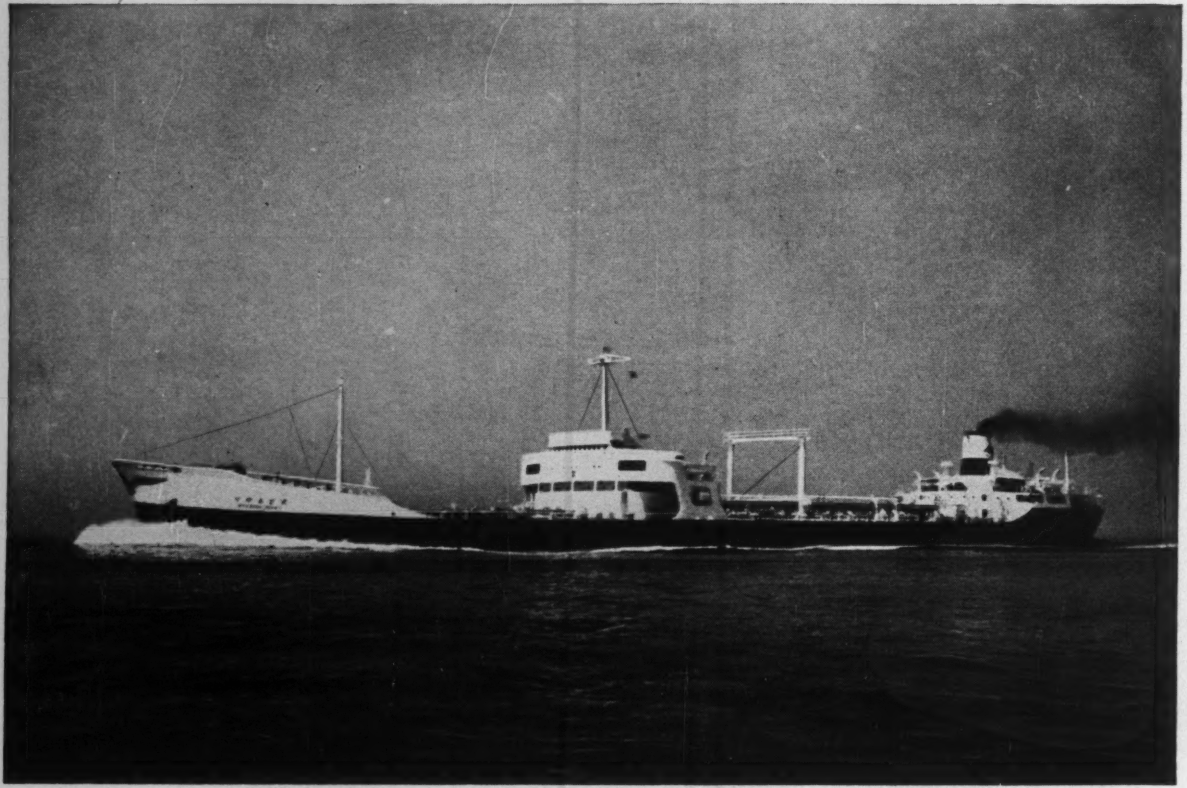
NKK -STEEL, PIPES & SHIPS



Tankers built by NKK with NKK's steel carry oil produced with NKK's pipes

NIPPON KOKAN's capacity to produce from iron ore an astonishing variety of high-quality products assures customers that the most exacting requirements will be promptly and faithfully met.

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NKK **NIPPON KOKAN K.K.**

(Japan Steel & Tube Corporation)

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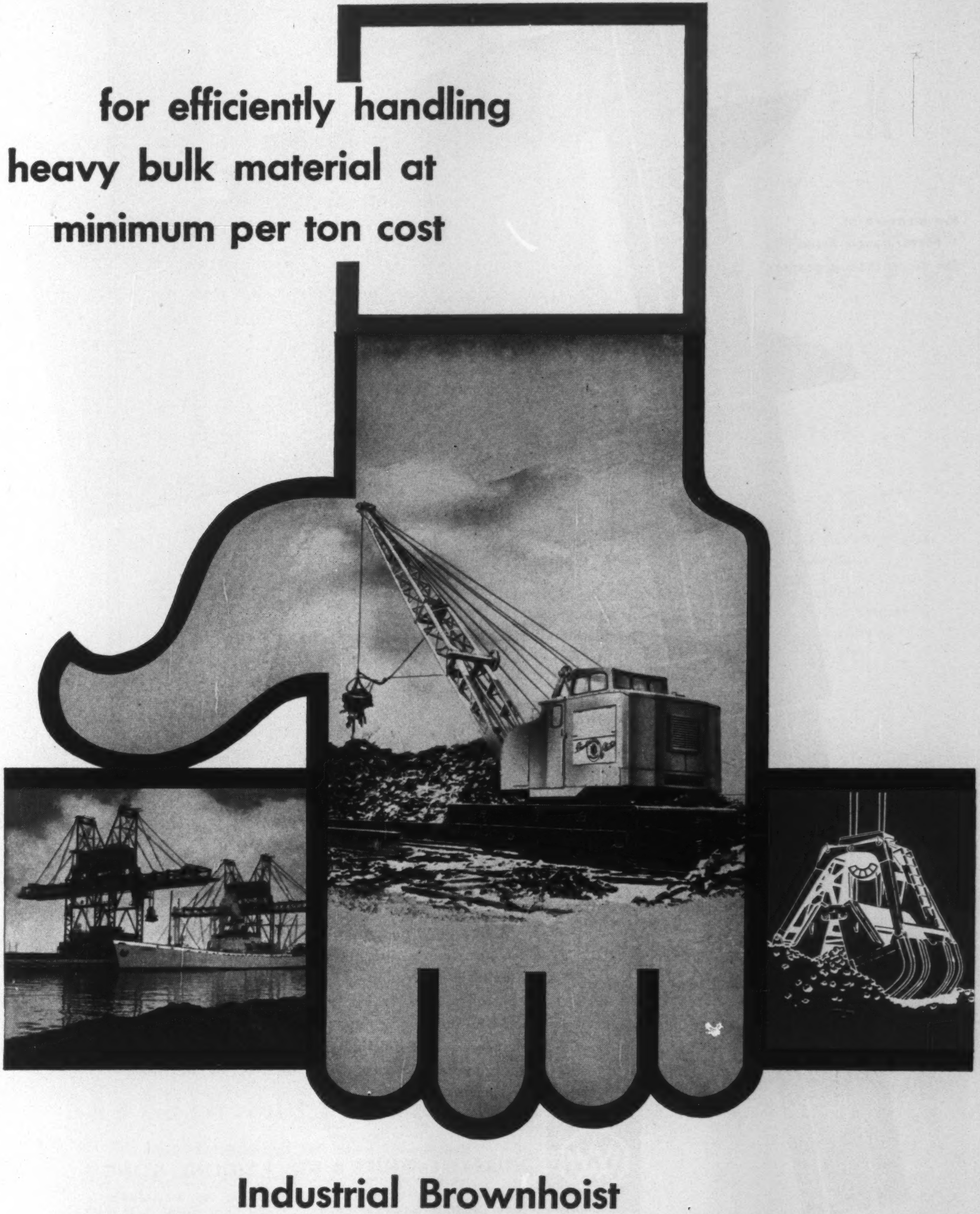
for efficiently handling heavy bulk material at minimum per ton cost



Industrial Brownhoist cranes, bridges, towers and buckets

write for catalog 562

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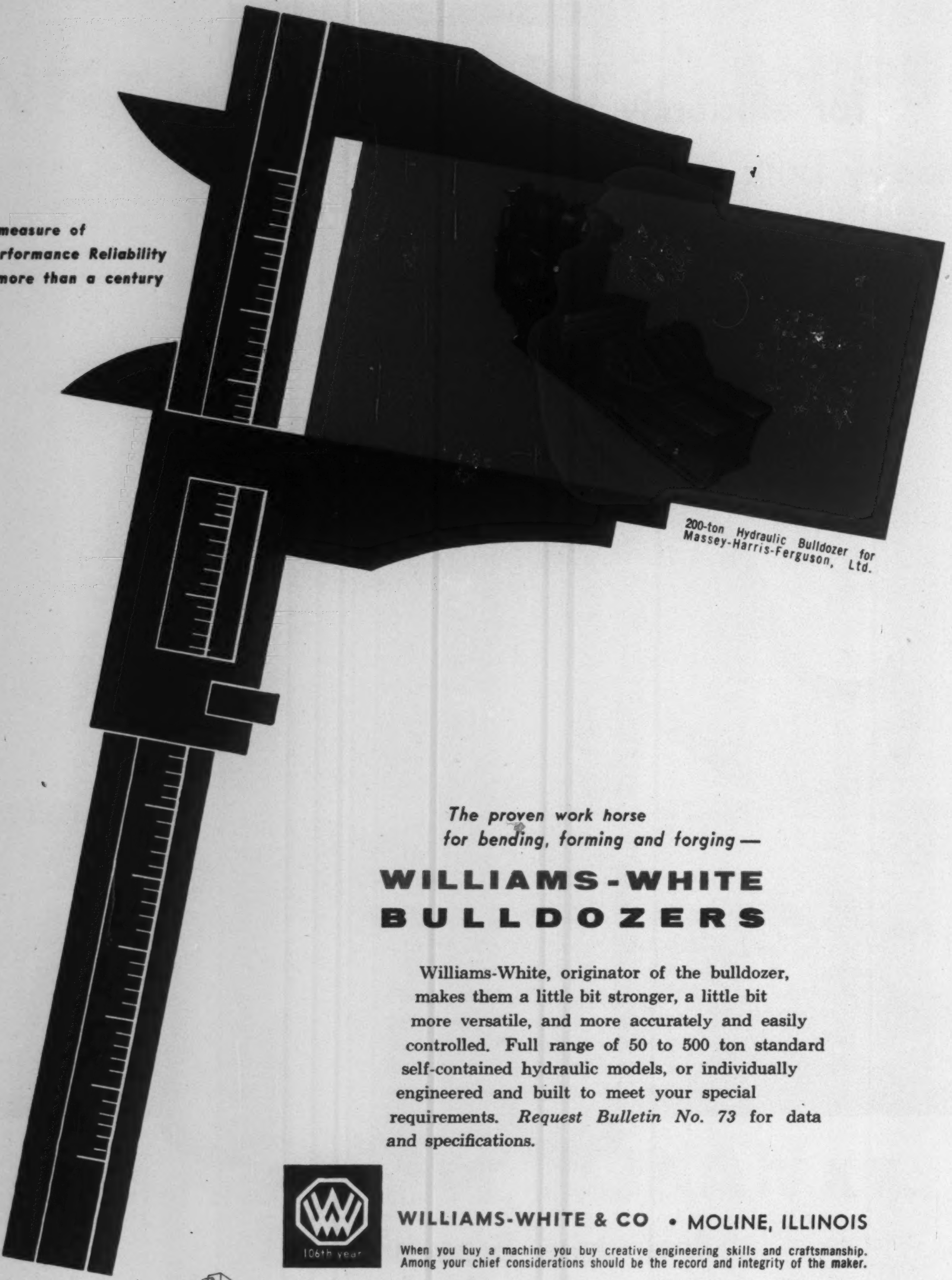
Performance Reliability
for more than a century



200-ton Hydraulic Bulldozer for Massey-Harris-Ferguson, Ltd.

The proven work horse
for bending, forming and forging—

WILLIAMS-WHITE BULLDOZERS

Williams-White, originator of the bulldozer, makes them a little bit stronger, a little bit more versatile, and more accurately and easily controlled. Full range of 50 to 500 ton standard self-contained hydraulic models, or individually engineered and built to meet your special requirements. *Request Bulletin No. 73* for data and specifications.

106th year

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When you buy a machine you buy creative engineering skills and craftsmanship. Among your chief considerations should be the record and integrity of the maker.

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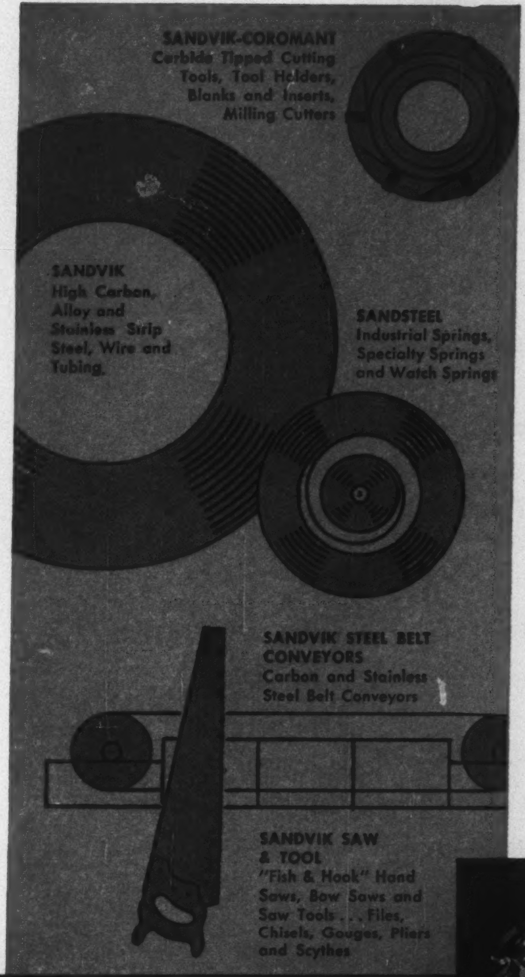
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Carbide Tipped Cutting Tools, Tool Holders, Blanks and Inserts, Milling Cutters
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SANDSTEEL
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SANDVIK
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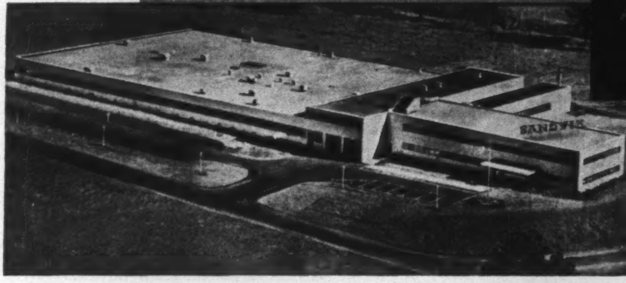
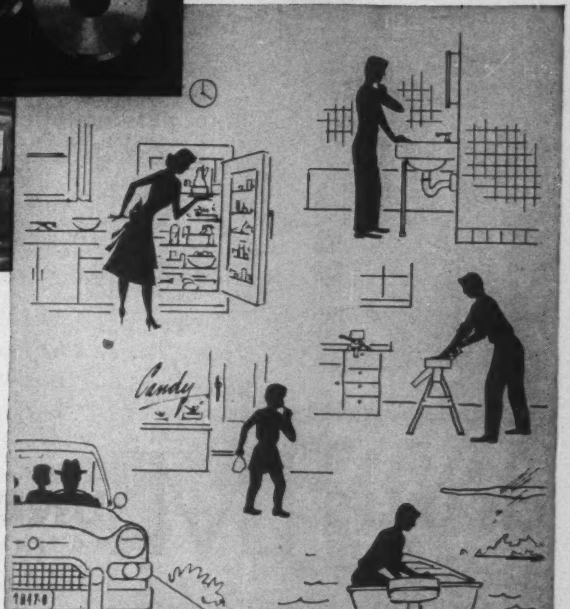
Serve Millions Of Americans

In razor blades and refrigerators, in clocks and cars, in hand saws and industrial tools, in chemicals and candy . . . almost anywhere you look, Americans use Sandvik products.

From coast to coast, Sandvik's consistent product quality and specialized service benefit both industry and the individual consumer. That's the reason why Sandvik has been growing with America since 1878.




Candy
SS-151

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We can guarantee sheets that are perfectly flat, straight, parallel on sides, and free from buckle or camber.

A tremendous variety of screens. Our modern tool and machine shop is constantly building new dies placing us in a position to construct special dies as conditions may demand.

Metallurgical and design assistance.

89 years of experience. Large enough for big jobs, small enough for personal attention.

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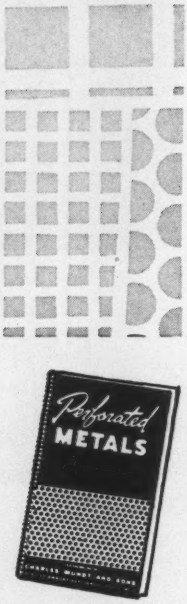
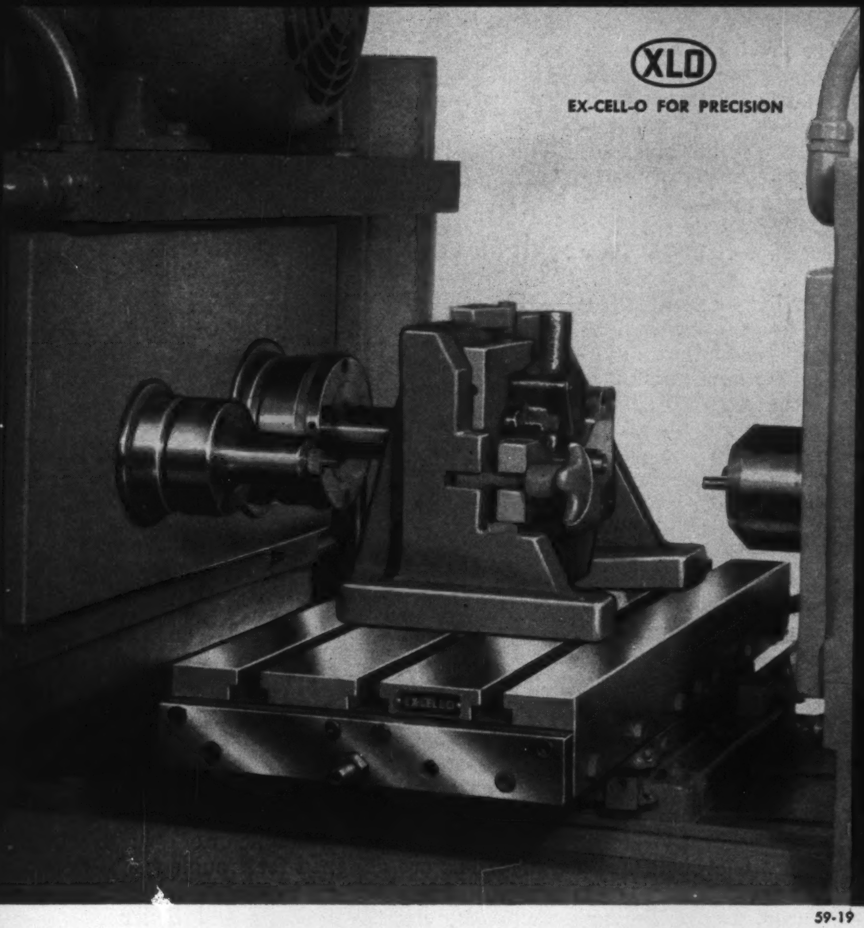


PERFORATING SPECIALISTS OF ALL TYPES OF MATERIALS

Add production flexibility the low-cost way, with EX-CELL-O UNIVERSAL FIXTURES



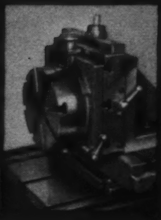
59-19

- Faster parts changeover
- Easier work setups
- More work from your present machines

LEFT
Hydraulically-operated cross slide of Universal Fixture supports angle plate fixture for production boring and facing.

BELOW
1 Manually-operated unit equipped with vertical slide. 2 Rotary Index Table mounts on Universal Fixture, has vernier scale for precise angular settings. 3 Installed on Style 17-A Precision Boring Machine, Hydraulic Universal Fixture increases versatility at low cost. 4 Adaptable to many operations, this Universal Fixture permits fast setup for line-boring and finish-facing work.

1



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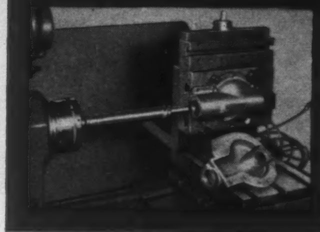

There's no end to the variety of boring, turning and facing jobs your Ex-Cell-O Precision Boring Machines can do when fitted with Universal Fixtures!

Designed for both short-run work and volume production, Ex-Cell-O Universal Fixtures come to you ready to mount on the machine table. Base, bracket and slides are normalized nickel-iron castings, with precision-machined T-slots and tapped holes for quick setup and accurate alignment of spindle to fixture. Work, fixtures or tools can be mounted at any position on the vertical or horizontal slide; inbuilt micrometer adjustment assures accurate setups.

Available for either manual or hydraulic operation, Universal Fixtures fit small and large Ex-Cell-O Precision Boring Machines, single or double-end models. Write today for details, or contact your Ex-Cell-O Representative.

EX-CELL-O
CORPORATION
DETROIT 32, MICHIGAN
Machinery Division

EX-CELL-O PRECISION PRODUCTS INCLUDE: MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • TORQUE ACTUATORS • THREAD AND GROOVE GAGES • GRANITE SURFACE PLATES • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

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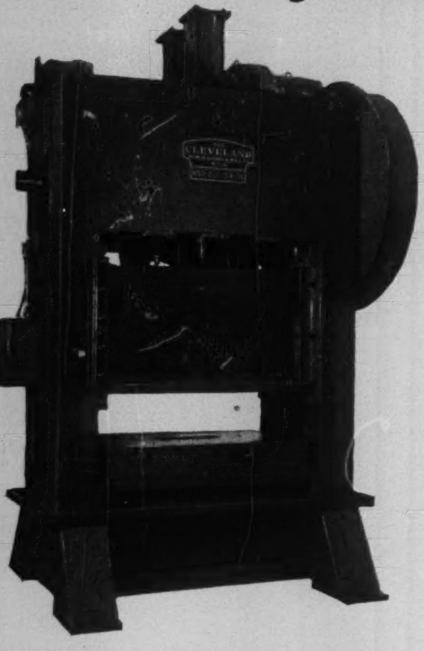
CLEVELAND

Cost-Cutting PRESSES

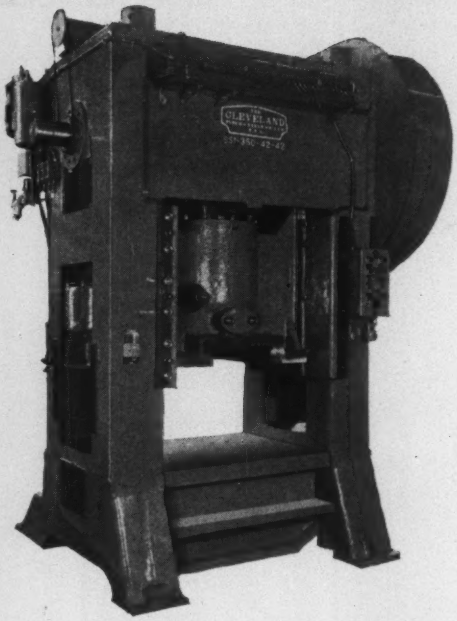


Cleveland high-speed Double Eccentric Press, 200-ton capacity, operates at 50 to 150 strokes per minute for high-speed punching, shearing, perforating, bending and forming.

Are production breakdowns, slow outmoded presses and mounting maintenance costs destroying your profits? A check of your press performance records may show you're already paying for new presses . . . *without their benefits*.

For lower operating costs, quicker starting, increased production, investigate the new minimum-maintenance Cleveland Presses. Our engineers are ready to help you plan a program of replacing old inefficient presses with modern cost-cutting Cleveland Presses of the exact type, size and capacity to meet your need.

You get better stampings for less with a Cleveland Press.



Cleveland's cost-cutting Single Eccentric Press, 350-ton capacity, operates at 60 strokes per minute, has air-counterbalanced slide and auxiliary air brake on flywheel.

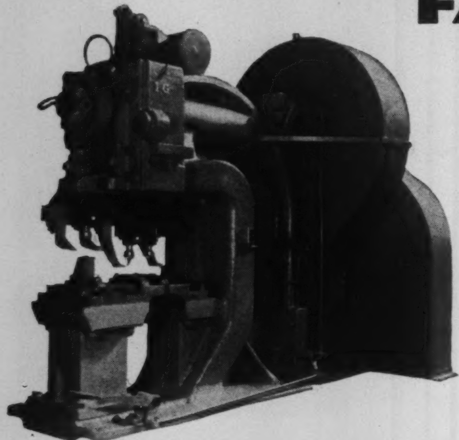
FABRICATING TOOLS

For Plate and Structural Steel

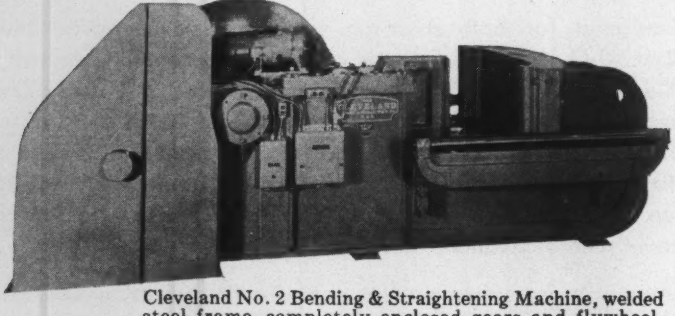
Ruggedly built for profitable production and simplicity of operation, Cleveland Fabricating Tools are designed for trouble-free operation and years of service—a fact proven by leading shipyards, bridge builders, railroads, structural shops and boiler makers since 1880.

For punching, coping, notching, shearing, bending and planing I-beams, steel plate, bars, angles and other structural shapes, you can do it better, more economically with Cleveland Fabricating Tools. Write for Catalog #9 to help you determine the correct tool for your needs.

AA-9106



Cleveland I G Beam Punching Machine equipped with 3 gaged punching attachments, one high and two low die holders, 24″ throat, completely enclosed gears and flywheel, punching capacity: standard 6″ to 24″ I-beams in flange and web. Other capacities and sizes available.



Cleveland No. 2 Bending & Straightening Machine, welded steel frame, completely enclosed gears and flywheel, arranged for direct-drive motor and equipped with power adjustment to plunger through separate motor. Capacity: bend or straighten 24″ I-beams vertically or horizontally.

THE
CLEVELAND
PUNCH & SHEAR WORKS CO.
Established 1880

Power Presses
Fabricating Tools
Punching Tools & Dies

E. 40th and St. Clair Avenue, Cleveland 14, Ohio

Photo courtesy of Jones & Laughlin Steel Corporation

BAKER'S MAGDOLITE AND JEBCOLITE

are always 5 ways better

Continued research and development throughout the years, plus The J. E. Baker Company's precisely controlled manufacturing methods, have resulted in the superior, properly burned, grain-sized Magdolite and Jebcolite particles which help provide:

More uniform ingots—increased ingot production—increased furnace efficiency—lower refractory costs—less defective production material.

Magdolite and Jebcolite* are the *original* dead-burned dolomites that offer better composition, preparation, strength, economy and quality. Don't say "dolomite." Save dollars. Specify Baker's Magdolite for open hearth and Jebcolite for electric furnace use.

**Jebcolite has the same superior chemical, physical and mineralogical characteristics as Magdolite and differs only in grain size which is designed specifically for electric furnace application.*

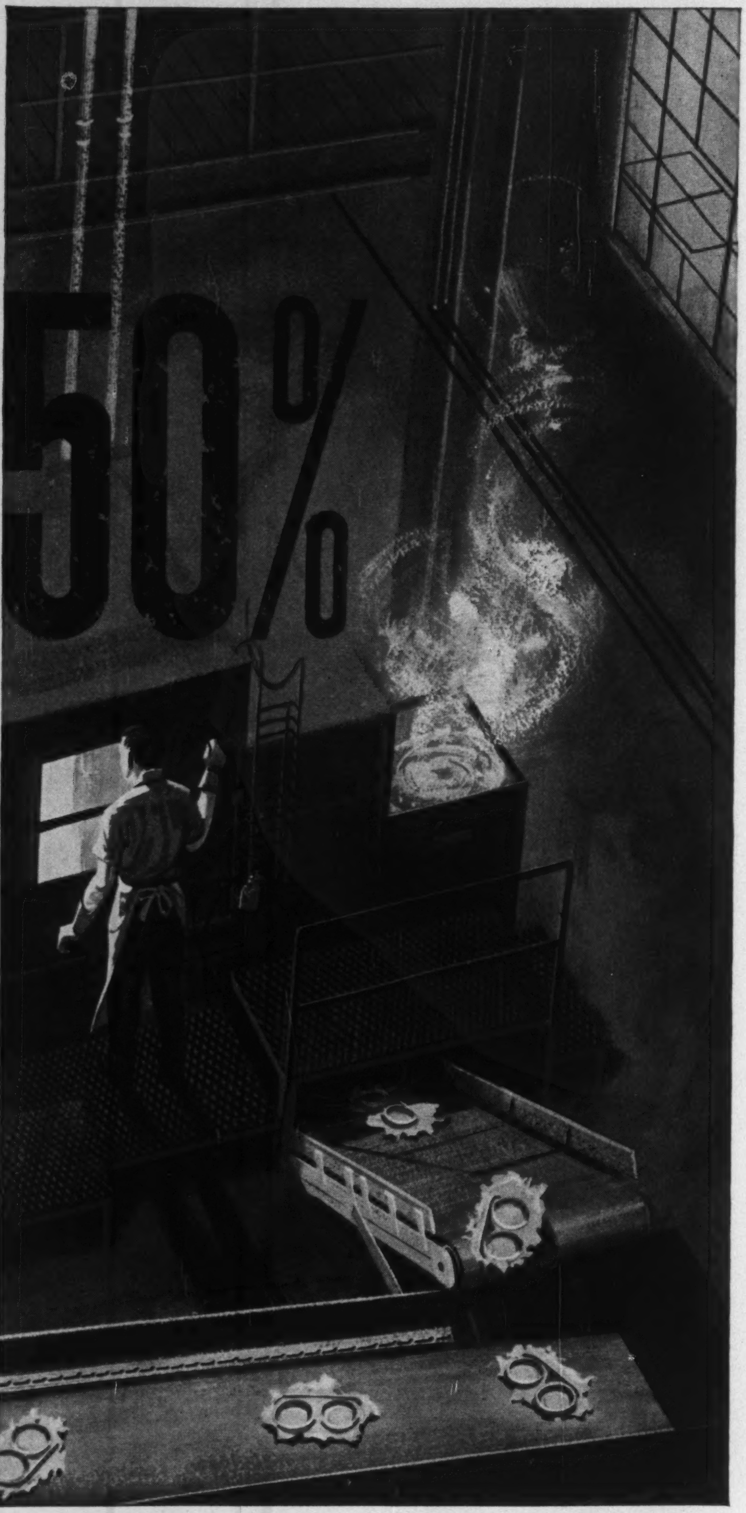
JEBCO
PRODUCTS
SINCE 1889

THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA

PLANTS: BILLMEYER, YORK, PENNSYLVANIA — MILLERSVILLE, OHIO

MODERN DROP-THROUGH METHOD SPEEDS DIE-CASTING PRODUCTION BY 50%



Brown-Lipe-Chapin eliminates manual handling with mechanical ejection of hot die castings.

Here's a typical example of how Brown-Lipe-Chapin engineers put quality into your die cast parts.

After the die casting cycle, castings are ejected automatically into a quench, where a conveyor takes them to the trim press. This modern method of die casting allows a maximum operating rate and boosts the over-all production rate by 50%. Also, casting uniformity is assured because the cycle time is constant and unaffected by operator fatigue or other human factors.

This is just one of the many outstanding features of Brown-Lipe-Chapin die casting facilities that can help make your product better and to more rigid quality standards.

Under the same roof are facilities for metal stamping, anodizing, electroplating, buffing and polishing, precision painting, plus complete engineering service. And two Brown-Lipe-Chapin plants, strategically located in Elyria, Ohio and Syracuse, New York, offer the same complete facilities. For further information, call or write Brown-Lipe-Chapin, Syracuse, New York.

GM
GENERAL MOTORS

RELIABILITY by BROWN·LIPE·CHAPIN

DIVISION OF GENERAL MOTORS CORPORATION

NEW! Aeroquip Catalog Gives Specific Product Data You Need for Effective Fluid Line Replacement

Aeroquip
INDUSTRIAL CATALOG No. 204

HOSE • FITTINGS • ADAPTERS • SELF-SEALING COUPLINGS • CAP-PLUGS, SLEEVES

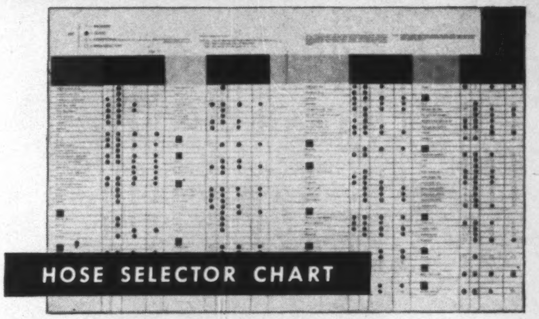

HOSE SELECTOR CHART

Chart shows you how to select the *right* hose lines to meet *your* precise needs!

Here is finger-tip-convenient information for purchasing agents and maintenance engineers working with fluid-carrying lines. This brand-new catalog presents clear, complete information on easy-to-assemble Aeroquip Hose Lines and Reusable Fittings.

High-quality Aeroquip products are available through factory-selected and approved distributors everywhere. These men are thoroughly qualified to provide expert advice and fast delivery of your hose line requirements. See the "Hose" classification in your Yellow Page phone book.

FOR REPLACEMENT USE—*NOT* A DESIGN CATALOG

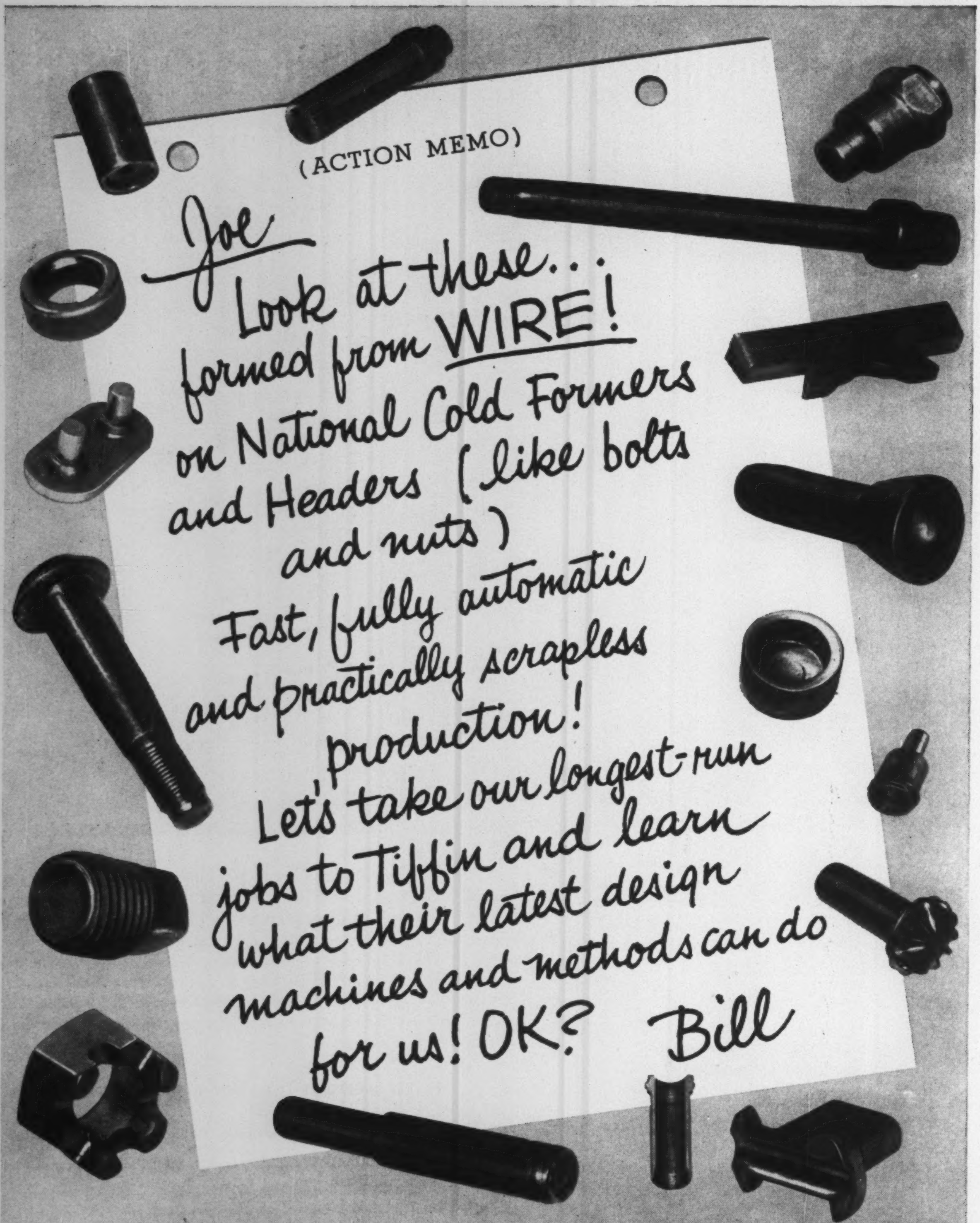
For your ADVANCE copy of this new catalog, fill in coupon—mail TODAY!

Aeroquip

REG. TRADEMARK

AEROQUIP CORPORATION, JACKSON, MICHIGAN
INDUSTRIAL DIVISION, VAN WERT, OHIO • WESTERN DIVISION, BURBANK, CALIFORNIA • AEROQUIP (CANADA) LTD., TORONTO 15, ONTARIO
AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

Aeroquip Corporation, Jackson, Michigan IA-1
Please RUSH me a copy of new Industrial Catalog No. 204
Name______________________________
Title______________________________
Company______________________________
Street Address______________________________
City____________________ Zone______ State________



(ACTION MEMO)

Joe

Look at these...
formed from WIRE!
on National Cold Formers
and Headers (like bolts
and nuts)
Fast, fully automatic
and practically scrapless
production!
Let's take our longest-run
jobs to Tiffin and learn
what their latest design
machines and methods can do
for us! OK? Bill

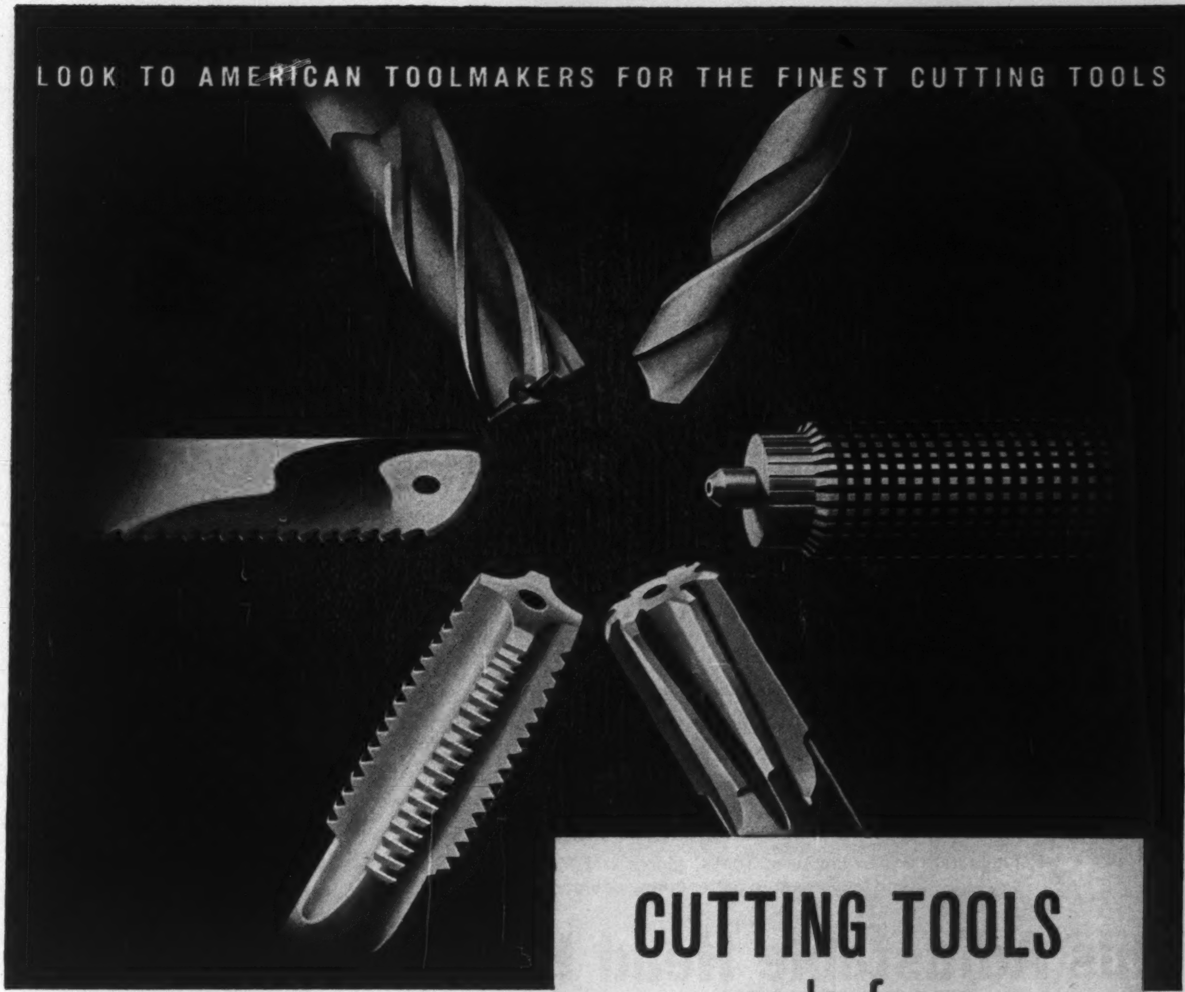
Founded 1874—DESIGNERS and BUILDERS of MODERN FORGING MACHINES • MAXIPRESSES • REDUCEROLLS • COLD HEADERS BOLTMAKERS • NUT FORMERS • TAPPERS • NAILMAKERS CO-PIONEERS WITH INDUSTRY OF ADVANCED METALWORKING PRODUCTION METHODS

HARTFORD DETROIT CHICAGO

NATIONAL MACHINERY CO.

TIFFIN, OHIO, U. S. A.

LOOK TO AMERICAN TOOLMAKERS FOR THE FINEST CUTTING TOOLS



CUTTING TOOLS made from HIGH SPEED STEELS *are* *Better Than Ever*

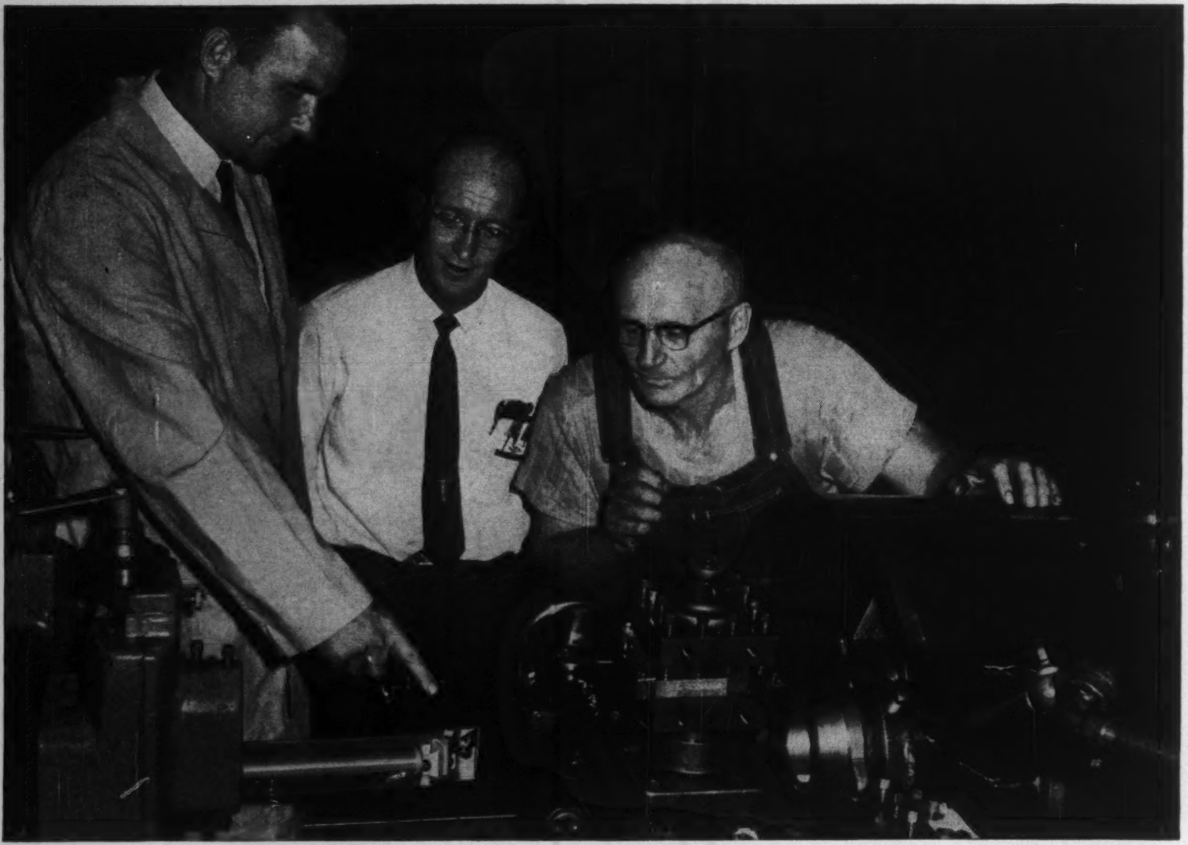
Today's high speed steel tools for tapping, drilling, milling, broaching, reaming, sawing and other metal cutting operations are better than ever. Through research and development, and new and better production methods, American toolmakers are constantly improving high speed steel tools to help you make better products . . . at less cost.

As a leading producer of high speed and other specialty steels, Universal-Cyclops continues to aid your toolmaker's efforts with its own aggressive research and development program.

Look to your American toolmaker for the finest in high speed steel cutting tools!

UNIVERSAL CYCLOPS
STEEL CORPORATION
BRIDGEVILLE, PA.

TOOL STEELS • STAINLESS STEELS • HIGH TEMPERATURE METALS



Kennametal Carbide Engineer, Tool Engineer and Machine Operator. This 3-Man Tooling Team found the answer to better boring operations at Gardner-Denver Company.

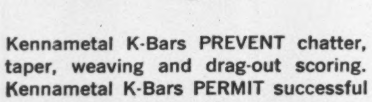
This Adjustable Head KENNAMETAL K-Bar does the work of 5 "special" bars

Three bores on this 8620 steel casting chuck end previously required five special boring bars. Chatter and inability to hold size was a constant problem. Then the Kennametal Carbide Engineer suggested that one Kennametal K-Bar be tried for all three bores.

Although the test setup was not ideal (11-inch bar overhang), the K-Bar conclusively outperformed the five bars previously used. Increased machining speeds possible with the K-Bar produced the outstanding time reduction shown in the table. Substantial savings will also accrue through reduced tool maintenance.

In the tests, depths of cuts were varied from .001 to .500 but chatter could not be detected. The high rigidity of Kennametal (three times that of the hardest steel) made it possible to eliminate weaving, chatter and provided a better finish. Ask your Kennametal Representative, or write us direct about our line of adjustable K-Bars with Standard Kendex inserts and chip breakers, seven sizes, 1-inch to 2½-inch diameters. KENNAMETAL INC., Latrobe, Pa.

Material: 8620 steel casting	
3-bore operation:	
4.470 bore—.325 depth of cut	
3.720 bore—.290 depth of cut	
3.220 bore—.290 depth of cut	
Actual machining time:	
Original setup (5 special bars)	16.7 minutes
Kennametal K-Bar	3.1 minutes
TIME SAVED PER PIECE	13.6 minutes



Kennametal K-Bars PREVENT chatter, taper, weaving and drag-out scoring. Kennametal K-Bars PERMIT successful use of harder grades of carbide inserts, faster machining speeds.

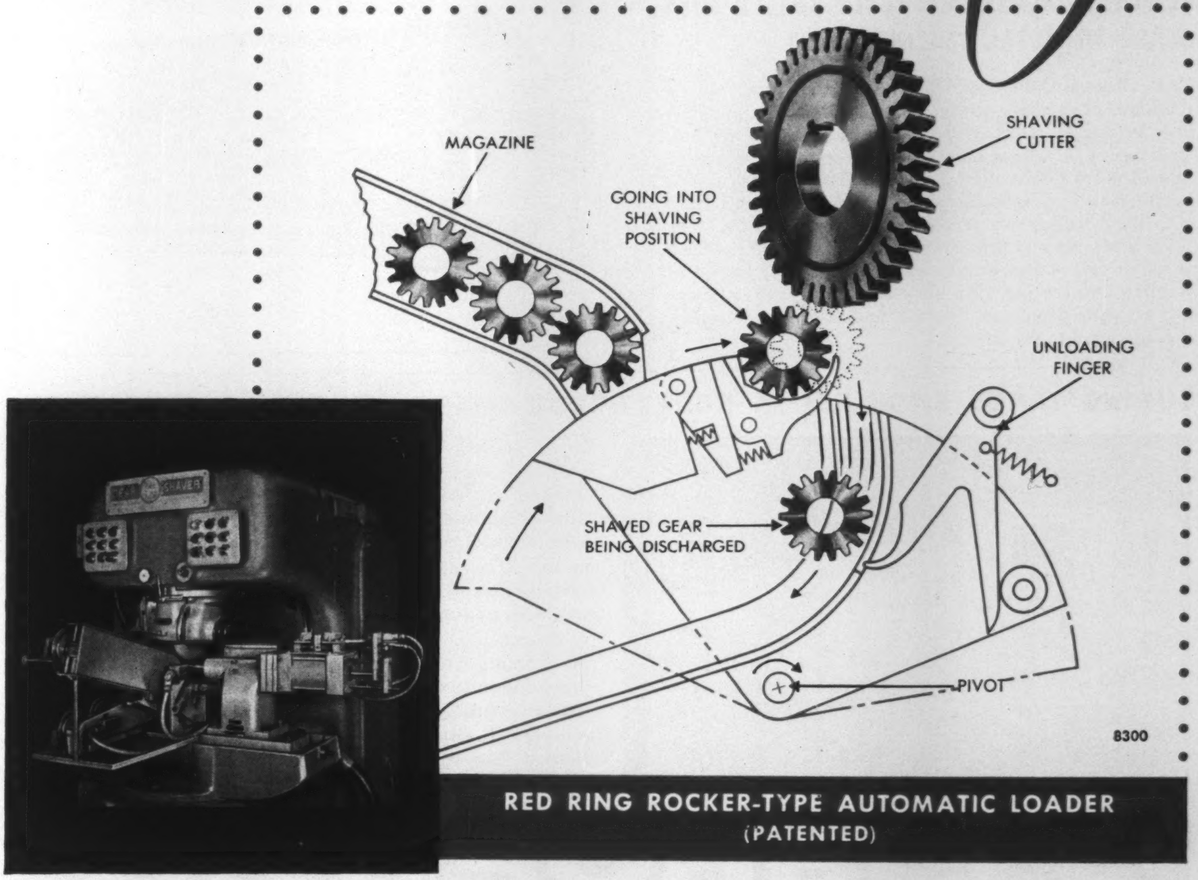
97289

INDUSTRY AND
KENNAMETAL
...Partners in Progress

WHY SETTLE FOR ONLY 75%

OF THE PRODUCTION YOU CAN GET WITH

AUTOMATIC GEAR SHAVING


MAGAZINE
GOING INTO SHAVING POSITION
SHAVING CUTTER
UNLOADING FINGER
SHAVED GEAR BEING DISCHARGED
PIVOT
8300
SHAVER

RED RING ROCKER-TYPE AUTOMATIC LOADER
(PATENTED)

Production you can expect from automated gear shaving is determined by the type of automatic loader you use.

You get maximum production when the loader moves a gear from the magazine into shaving position and discharges its shaved predecessor — **all at the same time**. This assures maximum cutter operation.

If, on the other hand, the loading of a fresh gear has to wait until the previous gear has been discharged, shaving is delayed and you get only about 75% of the production you could otherwise expect.

The standard Universal Red Ring Gear Shaving Machine may be automated for MAXIMUM PRODUCTION — and without any major revisions in its design. Write for details.

SPUR AND HELICAL GEAR SPECIALISTS,
ORIGINATORS OF ROTARY SHAVING,
GEAR HONING AND ELLIPTOID

NATIONAL BROACH
& MACHINE CO.

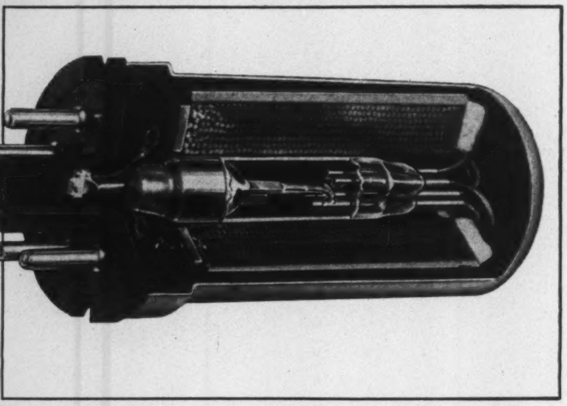
5600 ST. JEAN • DETROIT 13, MICHIGAN

WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

BISHOP
Tubular Products NEWS

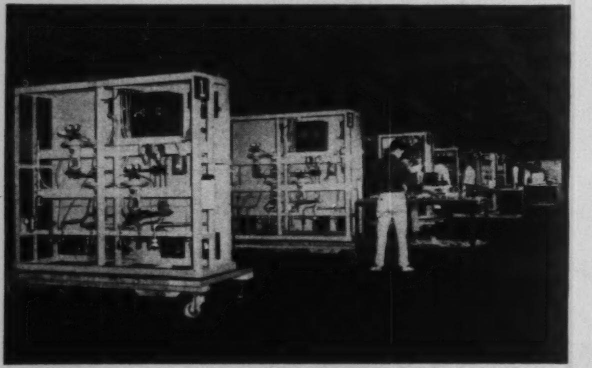
"METALS FOR PRECISION AND PERFORMANCE"

C. P. CLARE'S MERCURY-WETTED CONTACT RELAYS PERFECTLY SEALED WITH GLASS-TO-METAL SEALING ALLOY

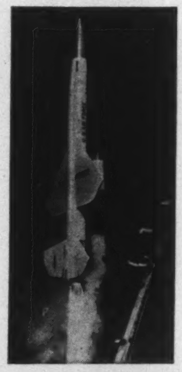


C. P. Clare & Company, Chicago, Illinois, produces a complete line of mercury-wetted contact relays characterized by long life, high speed of operation and no contact bounce. To supply relays that have a conservative life expectancy of more than a *billion* operations requires absolute perfection in all phases of manufacturing. C. P. Clare uses BISHOP's #52 alloy tubing for the critical tubular stems of these relays. Mercury and hydrogen at 150 psig are introduced through this connecting stem—which is then sealed off by welding and forging. Can glass-to-metal sealing alloys solve any of your problems? BISHOP makes a complete line . . . use the coupon for details.

TUBING TAKES 5,400 PSI IN HONEYWELL'S MISSILE CHARGING SYSTEM



Super pressure stainless steel tubing connects many components of the cubicles illustrated. Minneapolis-Honeywell's Missile Equipment Division, Pottstown, Penna. builds these control cubicles that make up the gas charging system for the Bomarc missile. BISHOP supplies Honeywell with two sizes of 304 seamless super pressure tubing for this application. During charging of the missile, tubing handles pressures up to 5,400 psi. If you use small diameter tubing—super pressure, commercial quality or other—consider BISHOP. Use the coupon for a copy of BISHOP's Tubular Products Bulletin.



J. BISHOP & CO.
platinum works

FOR HELPFUL DATA USE THIS HANDY COUPON

- ☐ Glass-To-Metal Sealing Alloy Data
- ☐ Tubular Products Bulletin No. 12
- ☐ Special Tubing Data
- ☐ Platinum Products Catalog No. 4

Check information you'd like and mail to
J. BISHOP & CO.,
35 King St., Malvern, Penna.

Name
Position
Company
Address
City Zone State

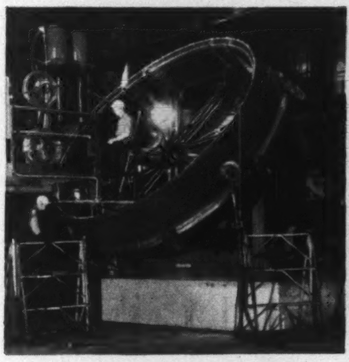
Tubular Products Division
35 KING STREET, MALVERN, PENNA.
NIagara 4-3100

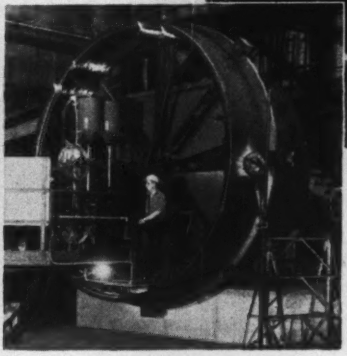
THIS IS THE BISHOP LINE:
Products of all the Platinum Metals... Small diameter Stainless Steel, nickel and special alloy tubing

EXCALIBUR...

Welding Positioner 175 TONS CAPACITY

ARONSON Model G3500 "EXCALIBUR" Gear Driven Positioner is used by a large Eastern steel producer for hard-facing bell hoppers for blast furnaces. "EXCALIBUR" provides the greatest precision and economy in the handling of large workpieces.





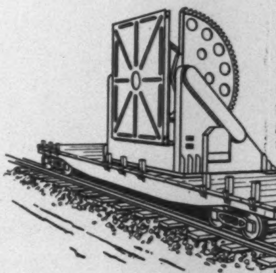
"EXCALIBUR" has been designed to handle almost every kind of weldment at lowest possible shop cost.

"EXCALIBUR" is not physically tremendous, being only 88" from floor to horizontal rotation axis, which allows working both large and small weldments without needing excessive headroom and without working too high above the floor.

"EXCALIBUR" will rotate your weldments as fast as .4 RPM, fast enough for automatic welding down to 8" Dia. and can handle as large a diameter as the factory space permits. It is designed for continuous duty as is encountered when automatic welding hard surfacing jobs where the table may not stop rotating for hours or even for days.

Owning **"EXCALIBUR"** opens production doors to you that are closed to your competitors. It is NOT a special job machine, but a Welding Positioner that will handle 90% of those jobs you now wrestle around the shop floor with the profit-eating crane.

It is quite possible that your capital investment in **"EXCALIBUR"** will be returned in labor and other costs saved in less than three years!



The G3500 is built 100% complete at our factory and requires no additional assembly at customer's site. Portable too...can be easily transported by rail for field fabrication jobs.

Specifications on Request

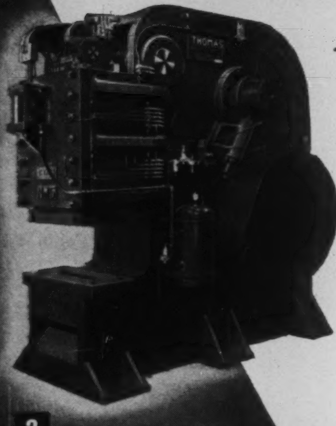
Quality POSITIONERS by **Aronson MACHINE COMPANY**
ARCADE, NEW YORK

WORK WORK

WELDING POSITIONERS • TANK TURNING ROLLS • TURNTABLES

for top-production steel fabricating

1


2

... the trend is to Thomas! Steel fabricators, shipyards, railroad car shops and steel mills look to Thomas for everyday dependability and ultimate economy in punching, spacing, shearing and bending machinery. Available in various sizes and tonnages to meet individual requirements. Illustrations show:

(1) Beam Punch and Motorized Indicator Spacing Table for beam, angle, channel and cover plate punching without layout

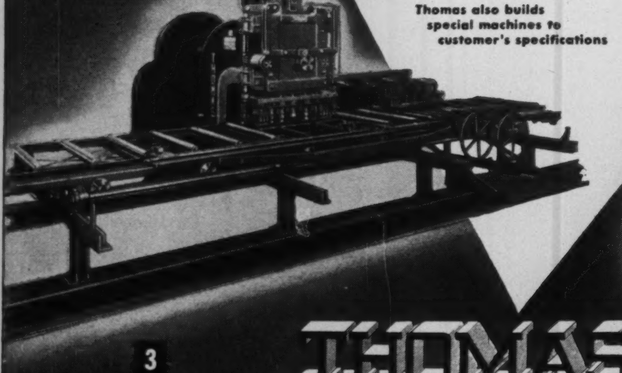
(2) All-Steel Vertical Punch or Shear for heavy-duty work

(3) Plate Duplicator for rapid, economical plate punching

(4) Heavy-Duty Mill Type Plate Shear, capacity 1¼" by 6' stainless 120,000 psi

THE TREND IS TO THOMAS

Thomas also builds special machines to customer's specifications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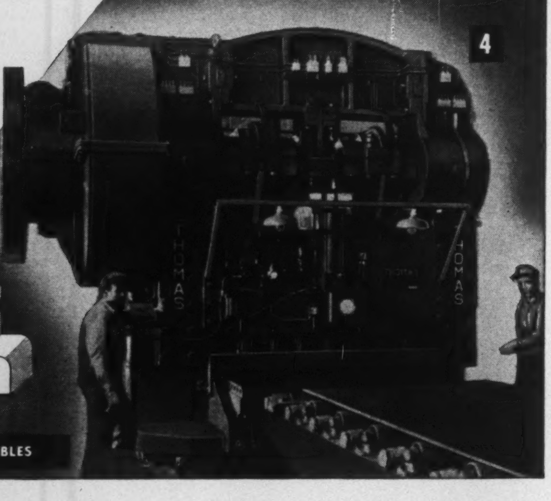

4

THOMAS

MACHINE MANUFACTURING CO.

PITTSBURGH 23, PA.

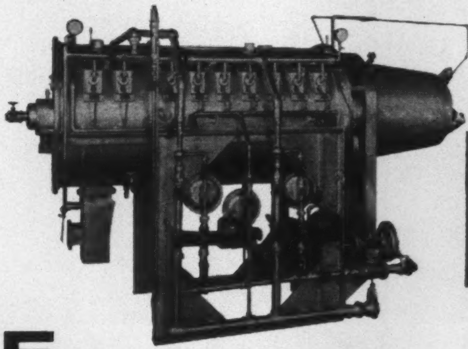
PUNCHES · SHEARS · PRESSES · BENDERS · SPACING TABLES *choose the versatile Best...*

AGF

AMERICAN GAS FURNACE CO.
81
YEARS OF
1878 PIONEERING 1959
ELIZABETH, N. J.

ROTARY RETORT AND RECIPROCATING HEARTH

for all small parts heat treating



AGF

Model 136-[illegible]

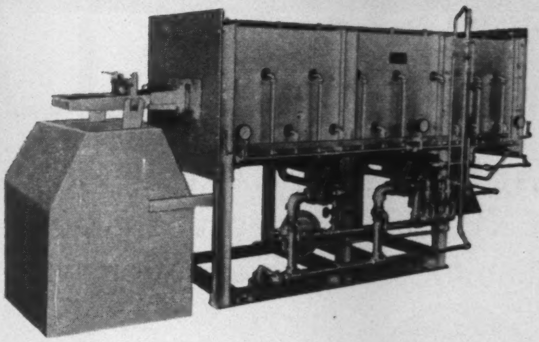
Medium size rotary furnace for the most economical heat treating of parts that can be subjected to a gentle tumbling (approximately ½ r.p.m.).

Tumbling ensures uniform heating and atmosphere contact.

AGF

Model 231

Medium size Shaker Hearth Furnace for the widest range of work, even light and delicate stampings. Momentum imparted to each work piece conveys it individually through the heat with no distortion or [illegible].



Capacities to 800 lbs. per hour. Processing pieces from .010" to 1" thickness and up to 10" in length. Automatic continuous feeding reduces direct labor costs drastically! Clean hardening, ammonia-gas case hardening, light case carburizing of steel parts, etc., are accomplished equally well WITHOUT ANY MODIFICATION OF THE FURNACE.

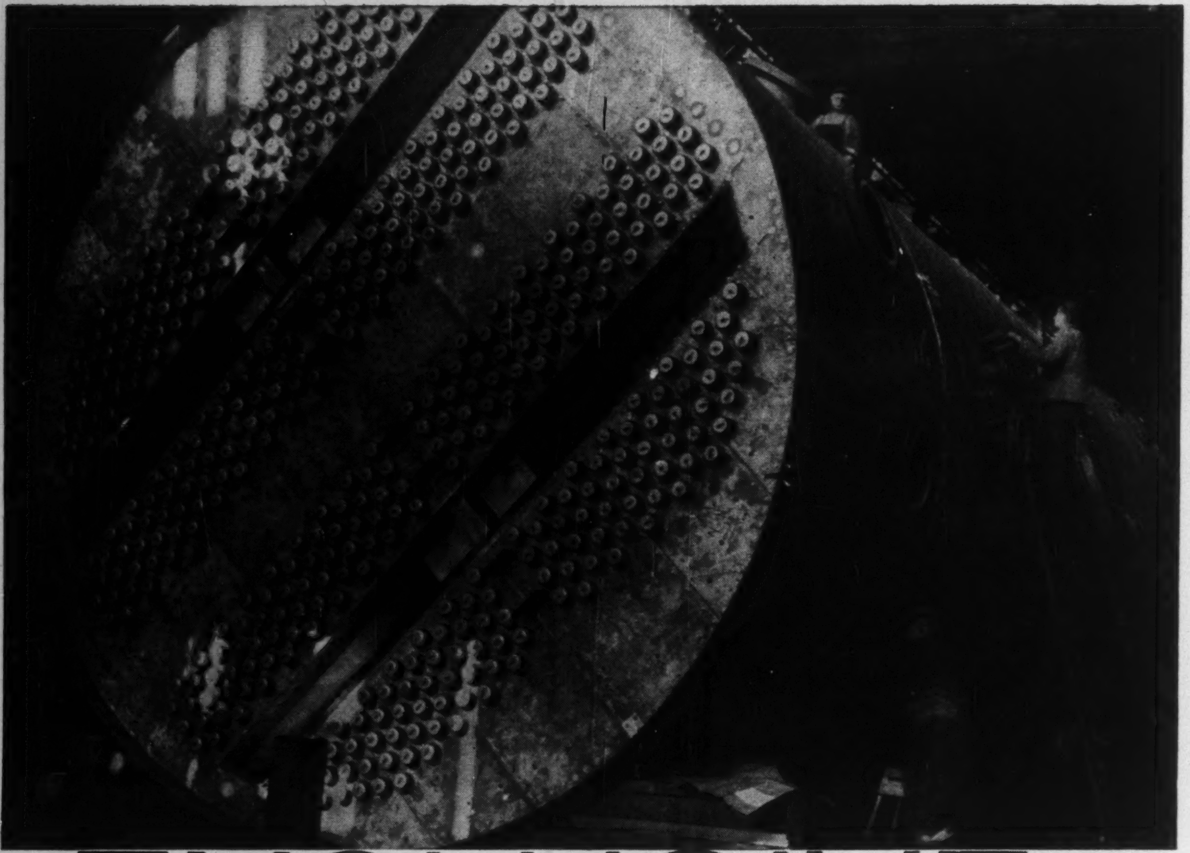
The muffles and retorts are, in reality, radiant tubes WITHIN which the work and atmosphere gas is contained. Zoned combustion systems uniformly heat these muffle tubes from the outside to the desired temperature in each work zone. Control is precise, results uniform.

New catalog of entire AGF line of equipment and accessories now available . . . Write for your copy today.

AMERICAN GAS PIONEERS 1878 FURNACE CO.

AMERICAN GAS FURNACE CO.
1004 LAFAYETTE STREET — ELIZABETH 4, N. J.

INDUSTRIAL GAS EQUIPMENT DIVISION
CODE OF ETHICS SIGNER
GAS APPLIANCE MANUFACTURERS ASSOCIATION



EXCLUSIVE...

At Sun Ship, STAINLESS STEEL is synonymous with EXCLUSIVE, because Stainless is never exposed to contamination by fabrication with ordinary carbon steel tools.

Working with the 300 to 400 series of alloys, clad steel, aluminum and other alloys, Sun fabricates pressure vessels, tanks, towers, troughs, autoclaves, reactors, hoppers, platework and machinery in all sizes and types. Each to exact specifications. Each with an additional quality feature... EXCLUSIVE.

SUN SHIP
BUILDING & DRY DOCK CO.
CHESTER, PENNSYLVANIA

another idea roller die, cold formed

by **VAN HUFFEL**

FOR KOPPERS ELECTROSTATIC PRECIPITATORS

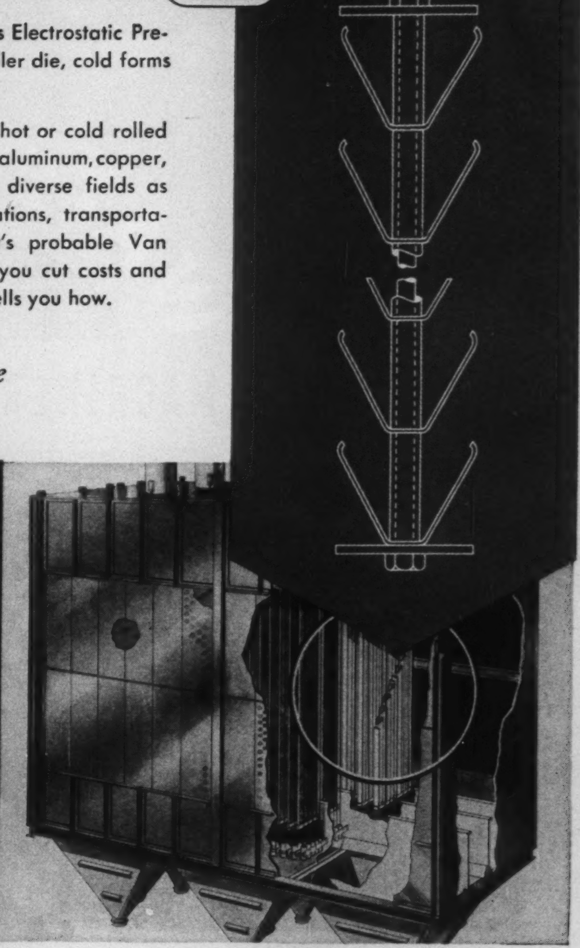
ACTUAL SIZE

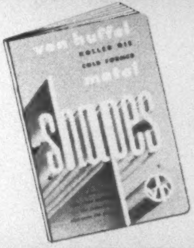
This V-Pocket Electrode section, produced for Koppers Electrostatic Precipitators, is another of the many ideas Van Huffel roller die, cold forms in various metals for a wide variety of applications.

Whether you require a simple or complex shape—in hot or cold rolled steel, stainless steel, high strength steel, coated steel, aluminum, copper, painted or plated metals—for parts in such widely diverse fields as material handling, building construction, communications, transportation, farm implements, furniture and appliances—it's probable Van Huffel's experience, facilities and products can help you cut costs and make a better product. The handbook shown below tells you how.

Where ideas take shape

Power plants look to Koppers for complete engineering service in the efficient control of fly ash.





MAIL COUPON FOR FREE METAL SHAPES HANDBOOK . . .

48 fact filled pages on material selection, fabrication methods, tolerances and dozens of illustrated ideas that have taken shape in metal.

Name.................................Title.....................

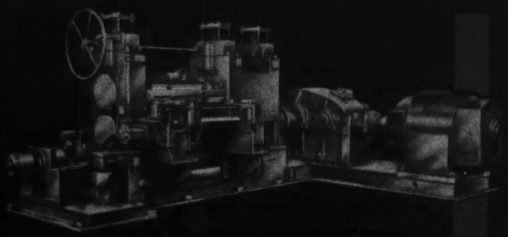
Company..

Address..

City...........................Zone....State..............

VAN HUFFEL TUBE CORPORATION • WARREN, OHIO

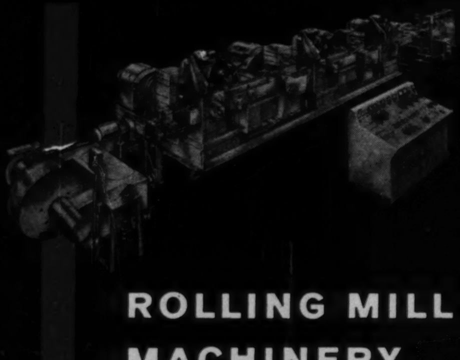
COLD HEADING
MACHINERY



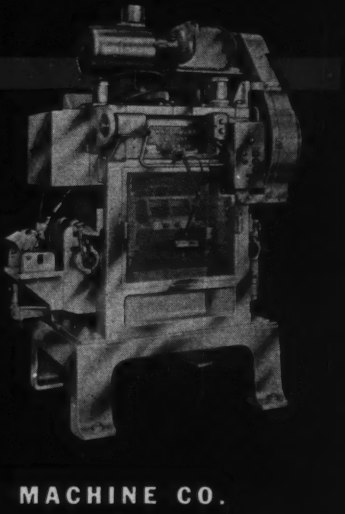
EYELET, SLITTER
& WIRE
MACHINERY

WATERBURY
MACHINERY BUILDERS
FARREL

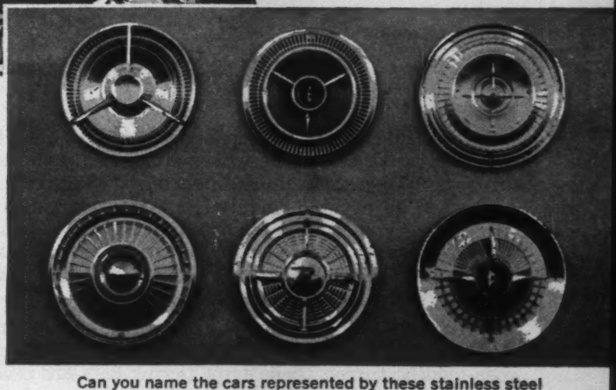
POWER
PRESSES



ROLLING MILL
MACHINERY



THE WATERBURY FARREL FOUNDRY & MACHINE CO.
DIVISION OF TEXTRON INC.
Waterbury, Connecticut, U.S.A.
Sales Offices: Chicago • Cleveland • Los Angeles • Millburn, N. J.



Can you name the cars represented by these stainless steel wheel covers? A postcard request will bring you the answers.

Brightness is Not Enough

Wheel covers must be more than just bright. They must have strength, spring temper, durability and low unit cost in volume production.

Other materials may claim some of these characteristics, but only stainless steel actually possesses all of them — and has a performance record to prove it.

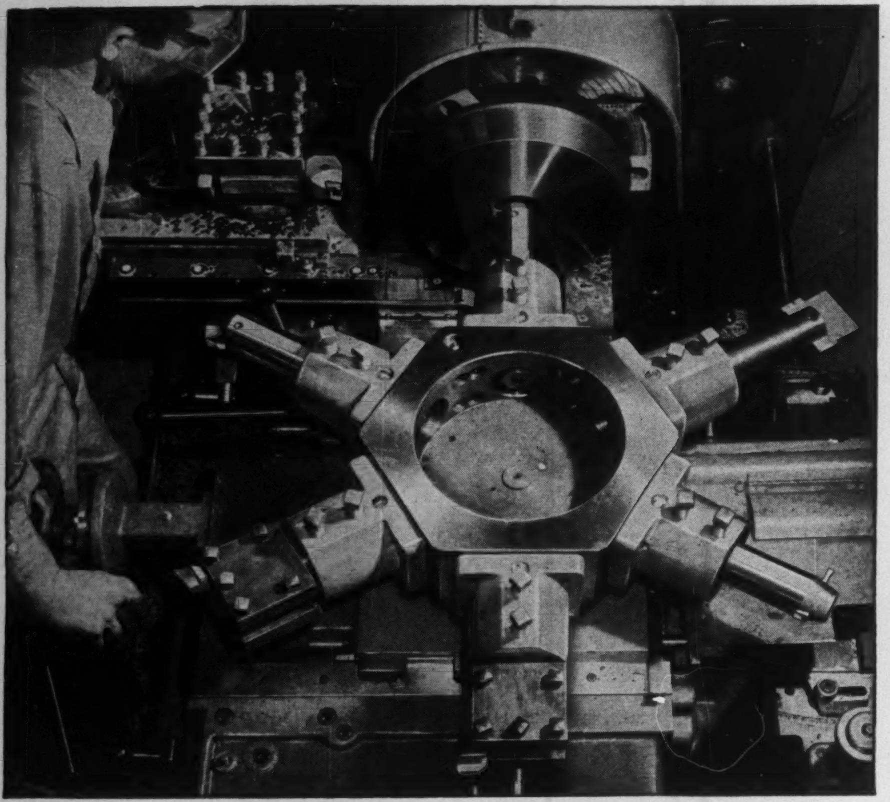
It is easy to **make cheaper wheel covers.** Just forget that customer complaints, lost goodwill and the inevitable replacement of parts eventually show up on the balance sheet.

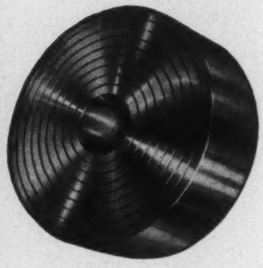
In wheel covers there is no substitute for stainless steel's lasting brightness, strength and durability.

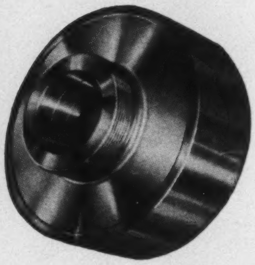
Plants and Service Centers:
Los Angeles • Kenilworth (N. J.) • Youngstown • Louisville (Ohio) • Indianapolis • Detroit

J&L
STAINLESS
SHEET • STRIP • BAR • WIRE

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 4606, Detroit 34







Expert setup gets more work per chucking

How manufacturer uses C/F turret lathe to produce variety of chuck bodies with only one tool change

To do the job, the manufacturer selected a Gisholt 1L Saddle Type Turret Lathe with a cross-feeding hexagon turret. A 15" 3-jaw air chuck holds down chucking time. One set of adjustable serrated jaw bases handles the different workpiece sizes for first machining operations. A quick-indexing square turret on the cross slide carries turning, facing and chamfering tools, which work simultaneously with tools on the hexagon turret.

Three stub boring bars on the hex turret bore, counterbore, recess and back face. Because size is set with the cross-feeding turret, these same boring bars are used on different part sizes. Also on the hexagon turret are 2 box-type tool posts for facing, boring or recessing—used for different size workpieces because of the cross-feeding feature. A threading attachment lets the manufacturer thread the hubs, and a taper attachment handles up to 8 inches taper per foot when required.

The sixth tool on the hex turret, a spade cutter, is used for final sizing and is the only special tool changed for each job.

Simple, low-cost tooling combined with the cross-feeding hexagon turret offers maximum efficiency in handling various sizes of similar parts. The rugged Gisholt MASTERLINE Saddle Type Turret Lathes have the speeds, feeds and power to complete the work in the least amount of time. Call your Gisholt Representative today, or write Gisholt for literature.

MASTERLINE GISHOLT SINCE 1887 · GISHOLT

GISHOLT
MACHINE COMPANY
Madison 10, Wisconsin, U.S.A.

WRITE TODAY for complete set of Gisholt MASTERLINE Saddle Type Turret Lathe Bulletins.

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • PACKAGING MACHINES • MOLDED FIBERGLAS PLASTICS

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STEEL
ROLLS

When production calls for economical flat, cold rolling, specify Marathon forged alloy steel rolls. When production demands quality specify Marathon steel rolls . . . induction hardened with exceptional hardening depth . . . uniform hardness . . . internally sound . . . economical . . . available with all finishes. Ask for our Technical Bulletin SR 11. Further information and details gladly furnished on request.

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SPECIALTY STEELS, INCORPORATED

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— For Every Field of Upset Forging in Industry —

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Choose from a complete line of AJAX Forging Machines to make the forged parts you need—

AUTOMOTIVE — Transmission Gears—Flanged Axle Shafts—Crankshaft Flanges & Drag Links

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For Higher Production and more accurately Forged Parts—Specify AJAX Forging Machinery

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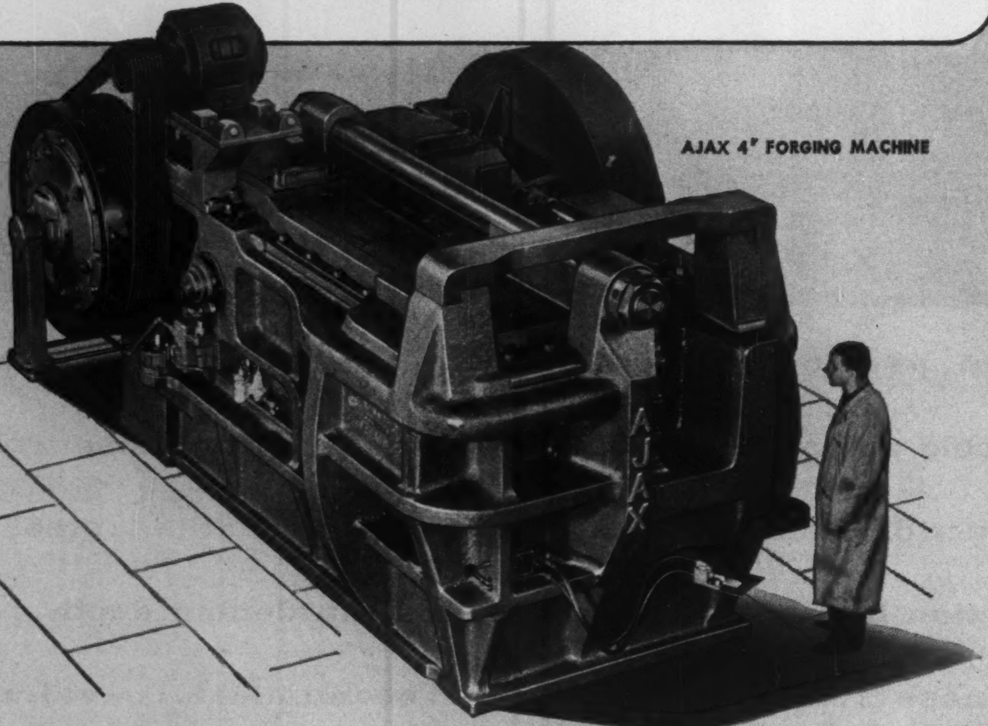
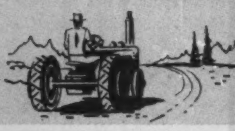


AJAX 4" FORGING MACHINE

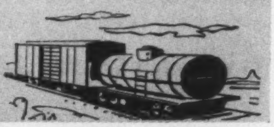
AIRCRAFT

AGRICULTURE



AUTOMOTIVE

RAILROAD



THE Ajax MANUFACTURING COMPANY
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CHICAGO OFFICE: 110 S. DEARBORN ST., CHICAGO 3, ILLINOIS
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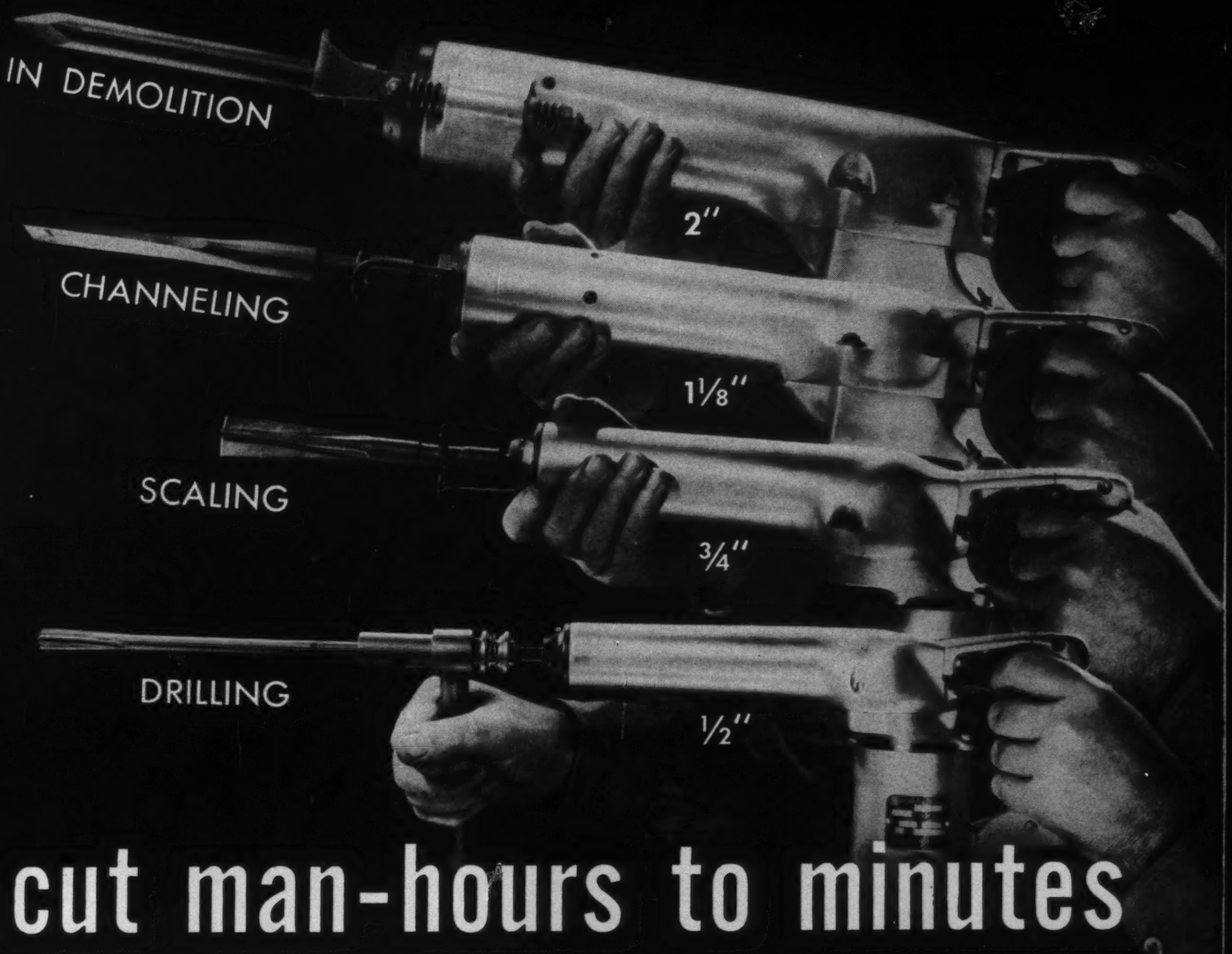
IN DEMOLITION
2"
CHANNELING
1⅛"
SCALING
¾"
DRILLING
½"
cut man-hours to minutes

...with Black & Decker's Electric Hammer Line

2200 cutting blows a minute . . . that's how fast a Black & Decker Electric Hammer can break up masonry, scale weld splatter, channel in concrete or drill a hole. Man-hours drop . . . output soars! Every Black & Decker Hammer is *power-packed* to dish it out . . . *ruggedly-built* to take it . . . *user-designed* for easier operation. But see for yourself. Clip and mail this coupon NOW . . . or see your nearby B&D distributor. Four models, ¼" to 2" star drill capacity.

A HAMMER FOR EVERY JOB—a size for every need—that's the B&D Electric Hammer line! Four models give you a choice of ½", ¾", 1⅛" and 2" drilling capacity in concrete. And power-packed B&D Hammers' many *patented* features put them head and shoulders above the rest.

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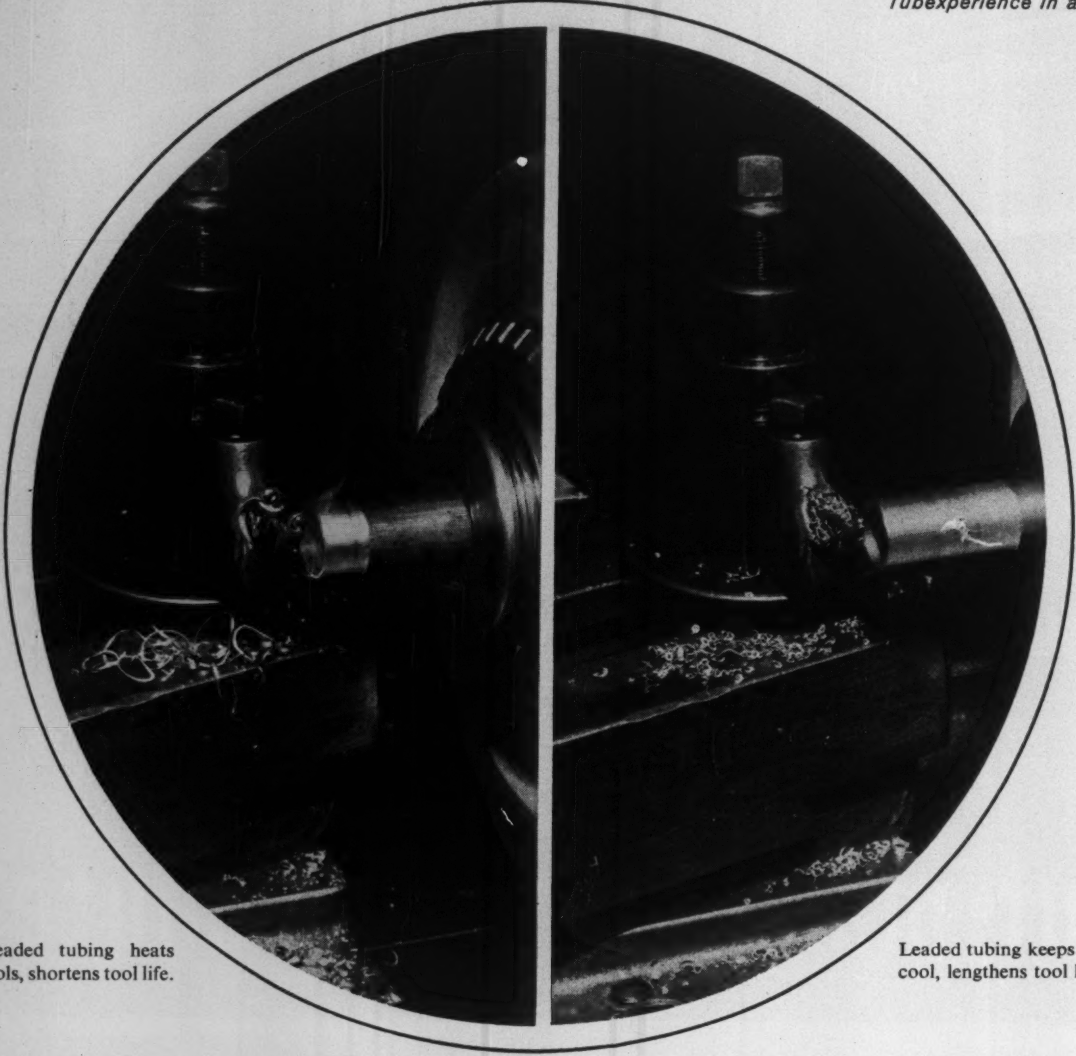
Tubexperience in action



Nonleaded tubing heats up tools, shortens tool life.

Leaded tubing keeps tools cool, lengthens tool life.

Now Superior Carbon Steel Tubing with Built-in Lubrication

New leaded 1020 tubing permits faster speeds and heavier feeds, often reduces the number of finishing operations

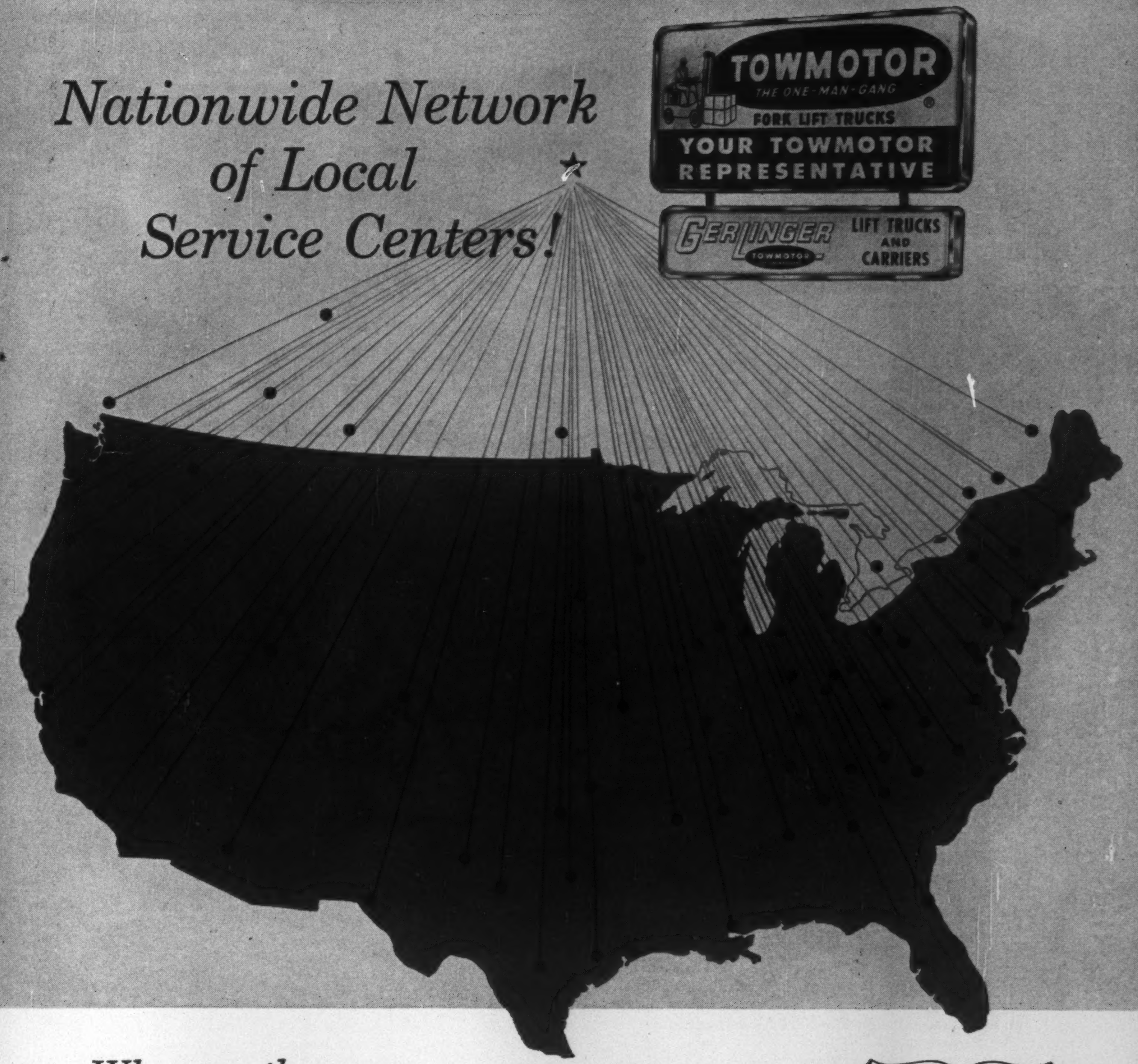
Where machinability is of major importance, specify Superior Seamless Leaded 1020 Tubing. Its built-in lubrication permits faster speeds in turning, drilling, tapping, milling, grinding and other machining operations, provides an 18% increase in feeds, and often reduces the number of finishing operations required to produce a smooth, lustrous surface. Build-up of metal at the cutting edge of the tool is minimized. Chip formation is improved. Tools operate at lower temperatures, last longer, and require fewer dressings. Lower tool cost is an accompanying benefit. Another is reduced downtime for replacement of dull and wornout tools. There is virtually no difference in physical and mechanical properties between leaded and nonleaded carbon steel tubing. So the grades are interchangeable.

Superior Seamless Leaded 1020 Tubing is available in a range of ODs from .012 through 1⅛ in. For particulars, send for Data Memorandum No. 24. And remember that other small-diameter tubing is available in more than 120 analyses, meeting a very broad range of applications. Superior Tube Company, 2004 Germantown Ave., Norristown, Pa.

Superior Tube

The big name in small tubing
NORRISTOWN, PA.
All analyses .010 in. to ⅝ in. OD—certain analyses in light walls up to 2½ in. OD
West Coast: Pacific Tube Company, Los Angeles, California • FIRST STEEL TUBE MILL IN THE WEST

Nationwide Network of Local Service Centers!


TOWMOTOR
THE ONE-MAN-GANG
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YOUR TOWMOTOR REPRESENTATIVE
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TOWMOTOR
LIFT TRUCKS AND CARRIERS

Wherever they are, users of Towmotor-Gerlinger fork lift trucks and carriers know that the industry's fastest service is as handy as a phone call. It's one of the reasons why industrial firms have invested millions of dollars in Towmotor-Gerlinger equipment.

Over 90% of parts are replaced off the shelf at local service centers —others within 24 hours! Prompt repairs are made by service experts. Even engine overhauls are treated like emergencies to maintain Towmotor's reputation for *Continuous Operation*. This is aided also by Towmotor Preventive Maintenance Service *which actually averts downtime, prevents wear, cuts repair bills and keeps equipment on the job around the calendar!*

Want more information on this unique Towmotor service? Ask for *Towmotor P-M Service Booklet SP-18*. Write Towmotor Corporation, Cleveland 10, Ohio.

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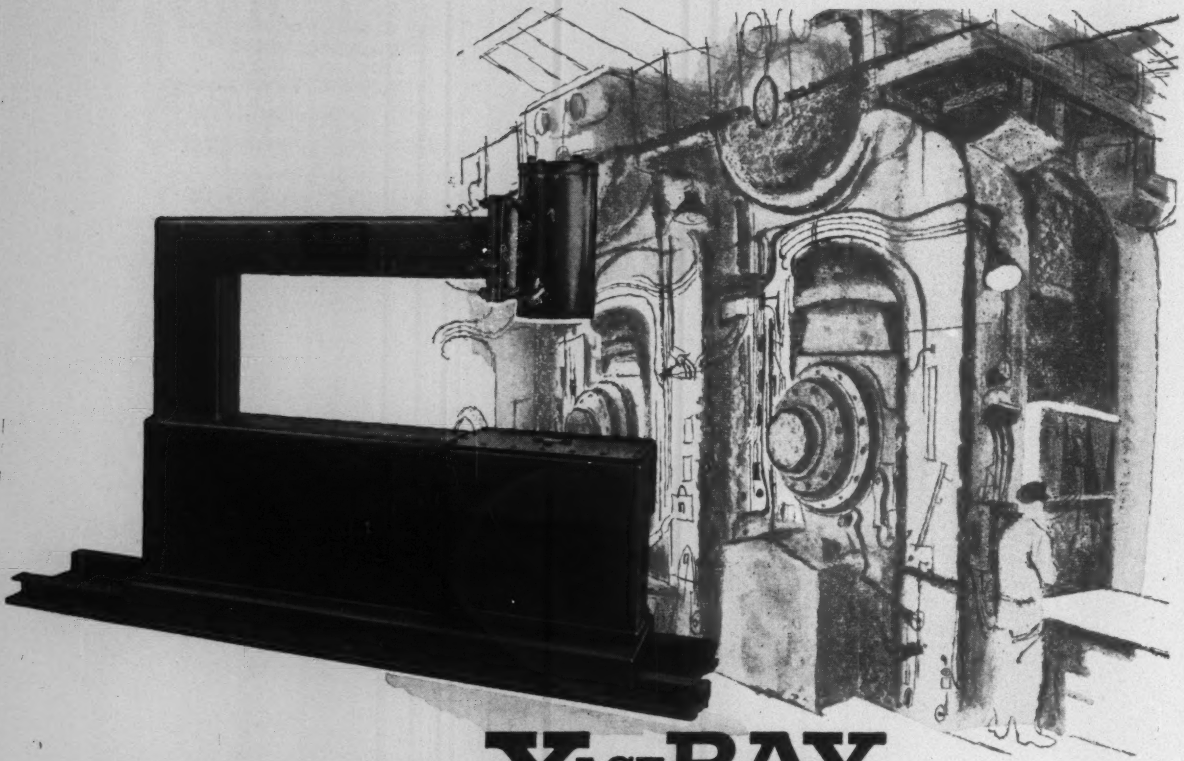
TOWMOTOR THE ONE-MAN-GANG ® **-GERLINGER**

LEADER FOR 40 YEARS IN BUILDING FORK LIFT TRUCKS, CARRIERS AND TRACTORS

**Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation*



NEW PULSED XACTRAY

cuts metal rolling costs 6 ways

XactRAY non-contact thickness gauges have a new look . . . and it's prompting smart metals men to take a new look at their cost balance sheets. Today's XactRAYs incorporate advanced components – such as pulsed X-ray sources greatly reduced in size and total radiation, and Weston's highly stable Vamistor® type resistors. At the same time, all the advantages which have earned XactRAY its high acceptance in the metals industry – such as absolute thickness calibration, unchanging for the life of the instrument – have been retained.

Whatever you roll . . . from foil to plate . . . ferrous, non-ferrous, or alloy . . . you'll find XactRAY can contribute dollar-savings to your operation.

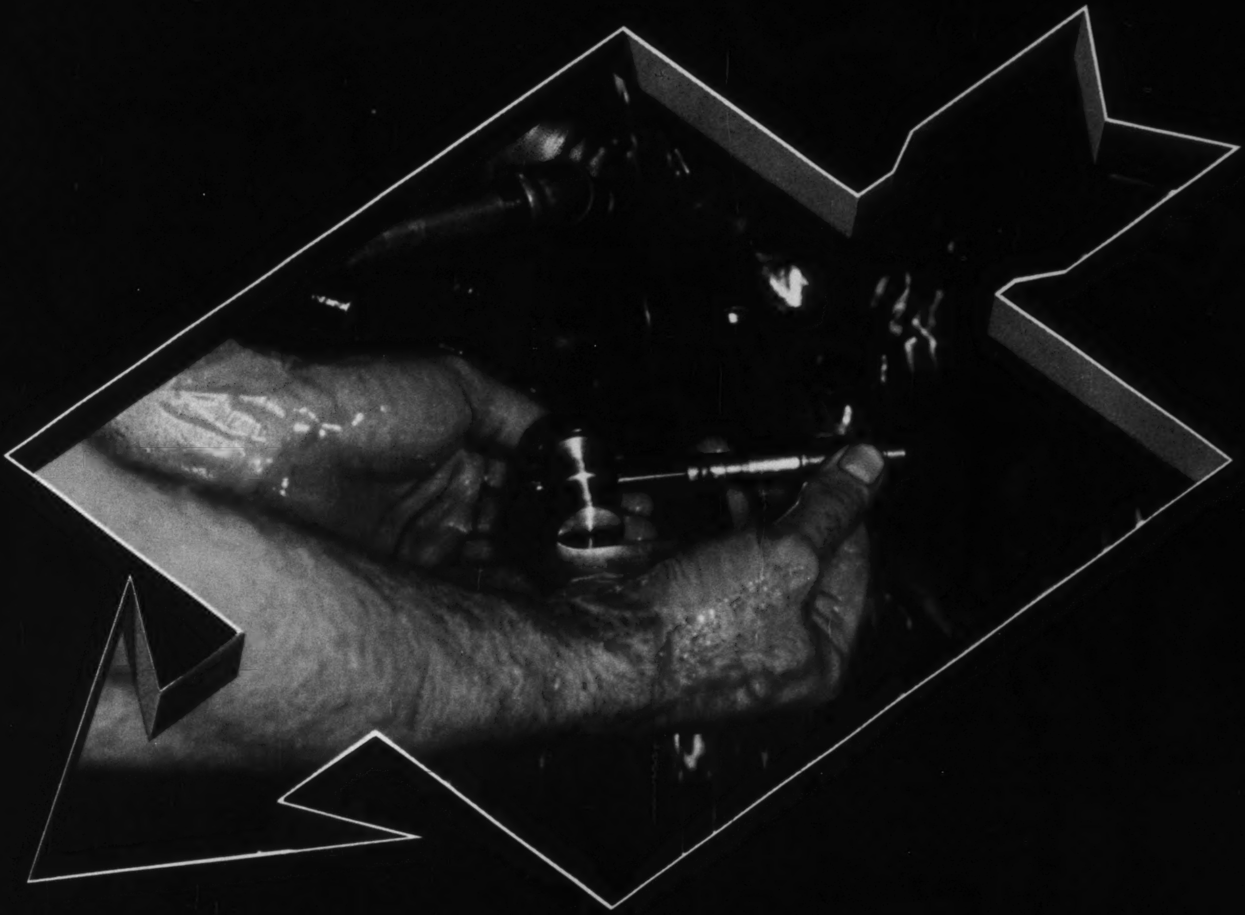
- **SCRAP AND START-UP LOSSES ARE REDUCED**
  XactRAY offers faster response to thickness deviation than any competitive gauge. You can adjust a new run of strip to within tolerance in seconds. This response – together with automatic, absolute calibration–permits drastic reductions in start-up wastage and returned material.
- **CLOSER TOLERANCES CUT REJECTS . . . INCREASE CAPABILITIES**
  With XactRAY, it's possible to achieve tolerances as close as ± .000010". You can roll more premium-grade strip . . . or record thickness over every running inch in order to locate premium-grade sections. With automatic, continuous traversal mountings, XactRAY gives you edge-to-edge as well as end-to-end monitoring . . . helps control "crowning" deviations.
- **ROLLING SPEEDS CAN BE INCREASED**
  XactRAY's accuracy is independent of strip speed . . . it will gauge with equal precision metal moving at 6 or 6000 feet per second. Vertical movements of the strip don't affect accuracy either.
- **NO INTERFERENCE WITH YOUR PROCESS**
  The new XactRAY is so compact and requires so little maintenance that it can be installed almost anywhere on your line . . . for maximum efficiency and minimum interference. Many users operate XactRAYs deep within their mills – even close to hot rolls. A broad variety of mountings permits custom-fitting of gauge to equipment. Threading is facilitated by the wide gap between X-ray source and receiver.
- **MANPOWER IS RELEASED FOR PRODUCTIVE TASKS**
  Continuous XactRAY gauging, together with automatic controls and/or deviation alarms, requires only occasional monitoring. Cumbersome hand-miking is, of course, eliminated – with consequent savings in man-hours and mill-hours.
- **EASY INTEGRATION WITH CONTROLS**
  XactRAY integrates readily with existing or XactRAY-MATIC controls for economical "closed loop" regulation of thickness.

For full information, contact your local Daystrom-Weston representative . . . or write to Daystrom-Weston Sales Division, Newark 12, N. J. *In Canada: Daystrom Ltd., 840 Caledonia Rd., Toronto 19, Ont. Export: Daystrom Int'l., 100 Empire St., Newark 12, N. J.*

DAYSTROM WESTON *Industrial Gauges*

WORLD LEADERS IN MEASUREMENT AND CONTROL

Quality . . . the best economy of all



He does a better job when he can see what he's doing

You increase operator efficiency as well as production when you use transparent, heavy-duty Sunicut cutting oils. Operators work better, because Sunicut oils let them see tools and workpieces, see the finish, see micrometer graduations.

Sunicut oils don't stain hands and clothing. They pump easily, wet metal fast, and give excellent extreme-pressure lubrication.

To prove to yourself the economy of Sun quality, ask your Sun representative to help you select the right grade of Sunicut for your heavy-duty cutting requirements. Or write to SUN OIL COMPANY, Dept. I-13, Philadelphia 3, Pa.

•

In Canada: Sun Oil Company Limited, Toronto and Montreal.

MAKERS OF FAMOUS CUSTOM-BLENDED BLUE SUNOCO GASOLINES

YOUR LODGE-ical CHOICE for PRODUCTION

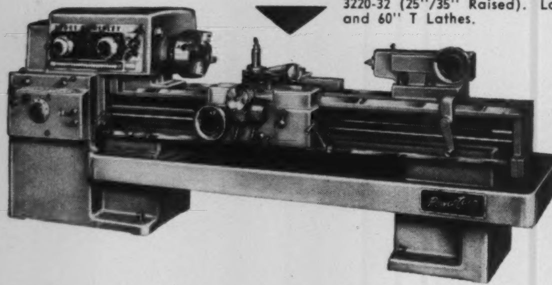
Lodge & Shipley LATHES • SHEARS • BRAKES

for low-cost, dependable service

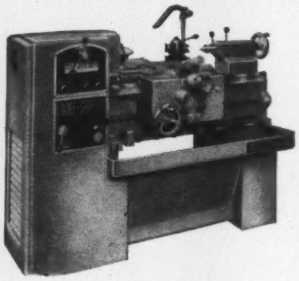
Lodge & Shipley equipment represents almost 100 years of experience in the design and manufacture of heavy metal working machinery . . . offers you the most advanced features for fast, accurate and versatile operation. Lodge & Shipley equipment is precision engineered, ruggedly constructed and honestly rated to give trouble-free, low-cost production.

LATHES

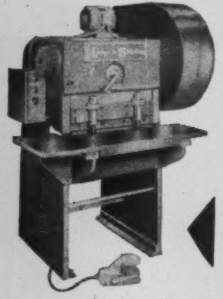
Lodge & Shipley POWERTURN Lathes combine accuracy and rugged strength with greater precision and operating convenience. Fast, foolproof Speed Dial headstock has just two dials for fast setting of speed changes. POWER-SHIFT PRESELECTOR Lathes are even faster; single dial for preselection of cutting speeds plus remote shift. Available in Engine, Toolmaker, Gap, 45° and 90° COPYMATIC (tracer controlled) Lathes in sizes from 1610 (13") to 3220-32 (25"/35" Raised). Lodge & Shipley also builds Hollow Spindle Lathes (with large hole through spindle) and 60" T Lathes.



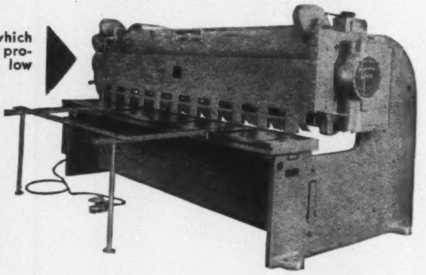
The Lodge & Shipley 1307 HI-TURN (10") Lathe is completely new in size, design, utility and even in its low price. It provides high speed turning, boring and facing capacity where the use of a lead-screw is of no consequence. The HI-TURN Lathe is extremely rugged and has nine geared speeds with a high spindle speed of 3000 rpm and 5 hp, giving the ability to handle newer, tougher metals at production rates. Also available with 45° hydraulic tracer slide and completely automatic cycling.



SHEARS

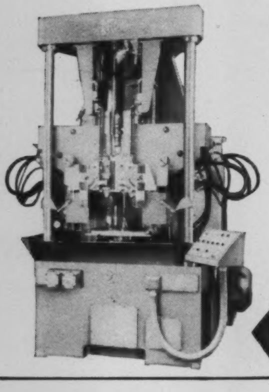


Featuring exclusive combination air clutch and brake which eliminates unnecessary gear wear, gives absolute overload protection, cushions shock. Many other features included in low base price. Capacities from 3/16" x 4' to ⅝" x 8'.

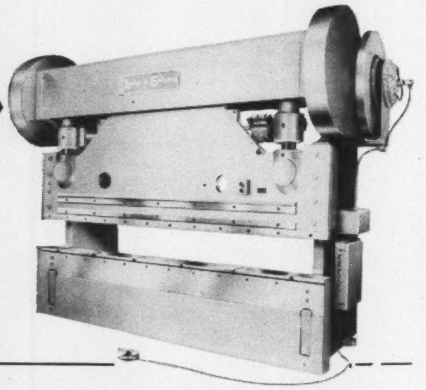


24" SPEED SHEAR . . . designed for accurate duplication of straight side parts without the expense of dies and punch press equipment. Production-proved for straight and angle shearing, slitting, notching, blanking and similar operations at speeds of 120 strokes per minute. Capacity: 10 gauge x 24" mild steel.

BRAKES



Rugged, powerful, heavy duty brakes with many features as standard. Specially-designed combination air clutch and brake installed in heavy, balanced flywheel requires no adjustment . . . known for trouble-free service. Available in capacities from 120 tons x 6' to 250 tons x 16'.



FLOTURN

Completely new metal forming equipment and process originated by Lodge & Shipley . . . saves time, material and tooling cost. Makes spherical, conical and cylindrical shapes from simple blanks. Replaces many costly forging, drawing and machining operations. No. 12 Vertical Floturn illustrated; larger sizes and sub-contract service also available.

Detailed Literature on Request

THE **Lodge & Shipley** COMPANY

3073 COLERAIN AVENUE
CINCINNATI 25, OHIO

METALOGICS

find out about this new science on the next three pages . . .

METALOGICS

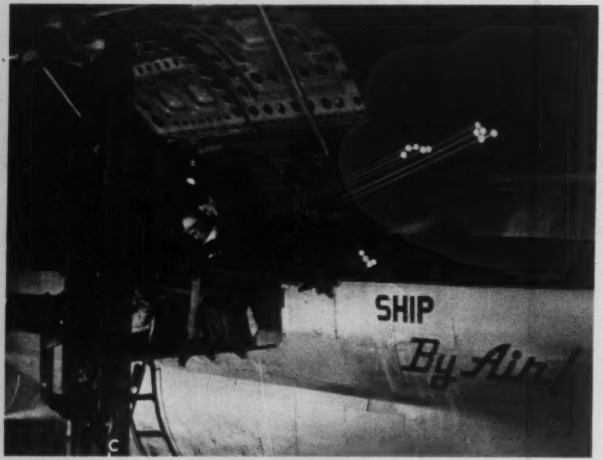
RYERSON PLUS VALUES

...the Ryerson science of giving optimum value for every purchasing dollar

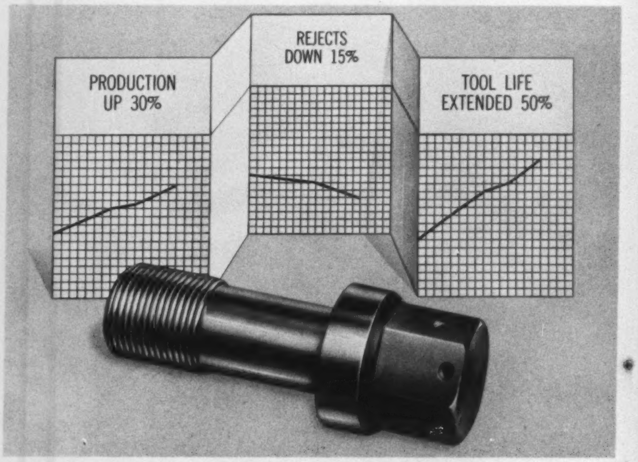
Metalogics at work . . . IN STEEL

Both good steels—but only one was right for the job. Severe stresses imposed by this forming operation caused a high rate of reject for a fabricator using hot rolled plate to the usual ASTM-A7 spec. A Ryerson specialist suggested change to Ryerson welding and forming plate—a prompt solution to a costly problem.

Missile component problem solved. Titanium stringers in stainless forged bars were creating a high reject rate for a missile parts manufacturer. His Ryerson specialist recommended a switch from Type 321 stainless to Type 347. Result: the same stabilized corrosion-resistance and strength—but no titanium stringers.



The need was urgent. A breakdown was cutting output of a big paint producer, but steel to repair the break was not available locally. A call to the nearest Ryerson plant 200 miles away resulted in delivery of 100′ of bar stock at the airport an hour later. Three and one-half hours after calling Ryerson in another state, the customer had his steel.



Value analysis boosts production 30%. This was the outstanding result when a metalworking company studied and evaluated production of piston pin boltheads with a Ryerson representative. He recommended Rycut® 40—the world's fastest machining alloy steel in its carbon range. Other results: rejects reduced 15% . . . tool life increased 50% . . . better finish.

Metalogics at work . . . IN ALUMINUM

Furniture manufacturer saves 15¢ per unit on every chair produced. A *rolled* aluminum angle in 6061-T6 alloy was being used where strength was not an important factor. A Ryerson aluminum specialist suggested an *extruded* angle in 6063-T5 which gave all the strength needed in the application, was more easily formed, had better appearance—and reduced costs as well.

Better product appearance and a saving in material cost resulted when a Ryerson man recommended that a producer of portable coolers switch from one aluminum alloy (3003-H14) to another (5005-H14). Slightly higher structural strength was a bonus value. Unusually broad aluminum stocks and technical resources often enable Ryerson to serve in this way.

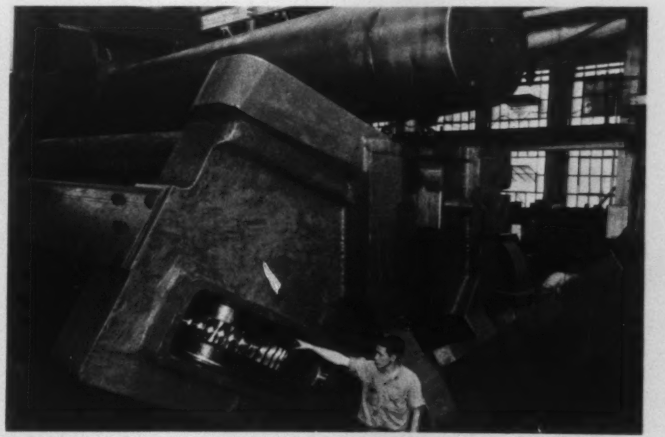
Also plus values in . . .

INDUSTRIAL PLASTICS

TYPE R
TYPE X

A leading chemical company was using a PVC pipe that included synthetic rubber for high-impact strength in producing 50% hydrochloric acid. But the acid ate away the rubber, leaving particles in the solution. The old pipe was replaced by Ryertex®-Omicron PVC, which contains nothing to contaminate the acid and has *natural* high-impact strength. Results thus far: 18 months of trouble-free service at 125° F. and maximum pressure of 40 psi.

METALWORKING MACHINERY



375-ton rolls to 7½-lb. punches . . . and everything in between. Whatever you need in metalworking machinery, call Ryerson. Over 3800 types and models available—everything from this huge bending roll to small hand punches. The Ryerson line includes machinery for bending, braking, drilling, forming, hoisting, pressing, punching, rolling, sawing, shearing, threading and welding. Ryerson also offers a complete, special line of material-handling equipment.

METALOGICS—see details of complete program on next page

METALOGICS

...how it works for you

Broadens Scope of Selection

Know a single source where you can get aircraft-quality alloys such as 9310, Nitralloy, and 4340 to A.R.T.C.-14 . . . as well as all standard commercial alloys and free-machining types? This is typical of the size and diversity of Ryerson stocks. Here, right at the tip of your dialing finger, are thousands of tons of steel and aluminum—in virtually every standard type, size and shape. Also, hard-to-get intermediate sizes and special analyses are readily available. This is true of Ryerson stocks, year in and year out—in all but periods of extended production shutdowns.

Brings Newest Developments

Remember when lead was first added to carbon steels for faster machining . . . when, a little later, leaded alloys came along? Ryerson stocked them for you first. And remember just recently when the world's fastest machining steel tubing and bars (Ledloy® 170 tubing and Ledloy 375 bars) were introduced? Again, Ryerson brought them to you first.

Gives New Measure of Quality

Quality—now there's a word that's worn thinner than an office-seeker's shoe sole. But Ryerson Metalogics has given it new meaning, with a brand-new set of rigid quality-control standards that are completely detailed and published for your scrutiny. They govern every aspect of specifications, verification, packaging, cutting and certification of all Ryerson products. If you want a tangible example of the scope of this new quality program, take a good look at Ryerson cutting tolerances. Then see if you can find any that are held more closely.

Provides Best Technical Help

"Expert" is another worn-out word we hesitate to use. But we do put at your disposal the industry's most experienced men. They're ready to give you the benefit of their nationwide, daily experience with all kinds of problems—material selection, fabrication and the ever-present specter "cost of possession." And remember, nowhere else will you find as wide a range of published technical information to help you in your metalworking operations. It's yours for the asking.

Builds Solid Business Relationship

Here's a company you should get to know better for our primary business is that of satisfying customers. And we've kept a lot of people satisfied over the last 100 years. We'd like to satisfy you, too.

Meets Most Exacting Schedules

What do you need right now . . . tomorrow . . . or in the future? Whatever you need, Ryerson is there —"the fastest with the mostest"—exactly when you need it—as you need it.

Why not discuss the exciting story of Metalogics with your Ryerson representative soon. You'll find he can help you in more ways than you might think —to meet all your requirements for steel, aluminum, plastics and metalworking machinery.

Be "METALOGICAL"—call Ryerson

METALOGICS
RYERSON PLUS VALUES

STEEL • ALUMINUM • PLASTICS • METALWORKING MACHINERY

RYERSON STEEL

Joseph T. Ryerson & Son, Inc., Member of the INLAND® Steel Family

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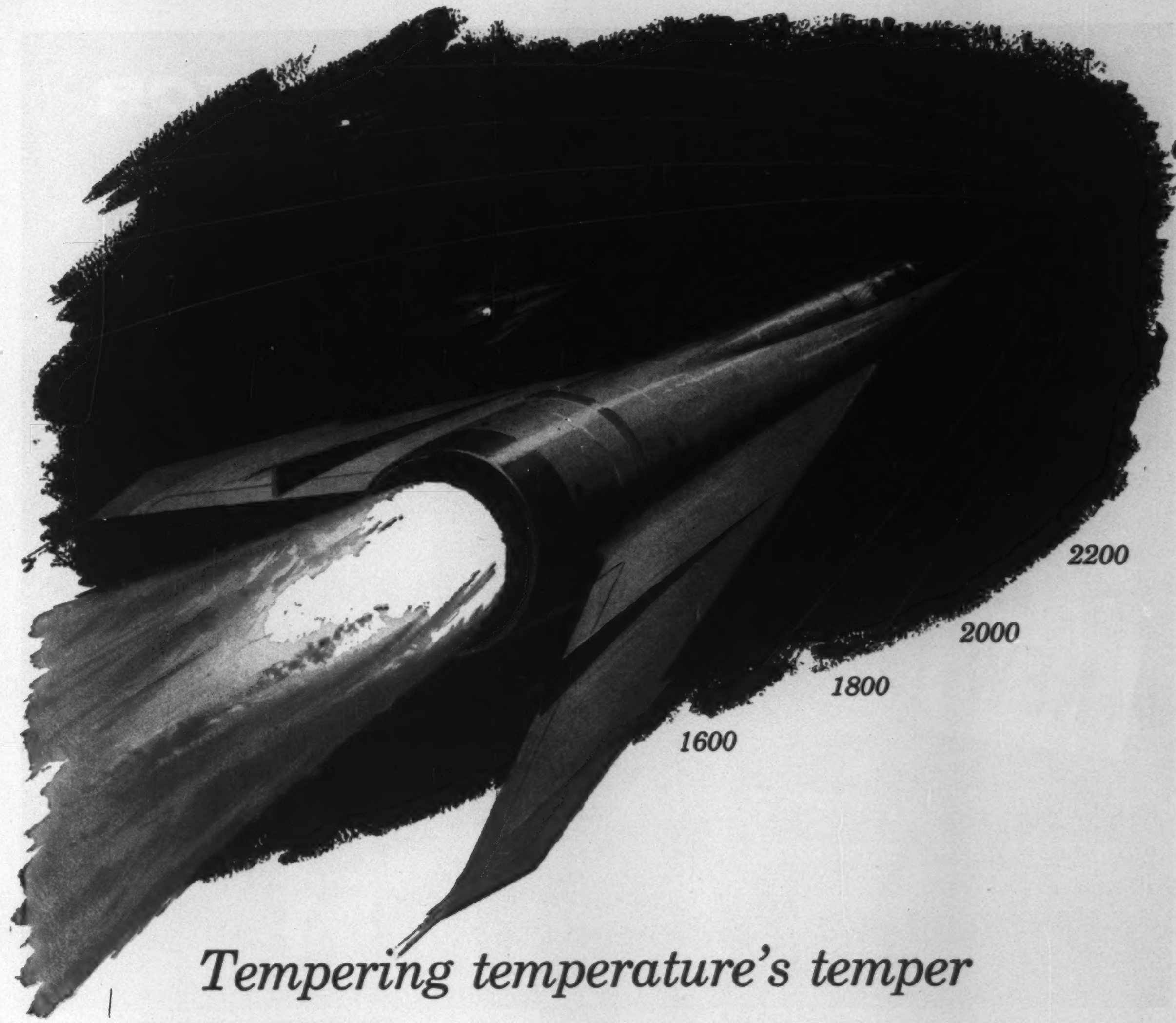
LOS ANGELES • MILWAUKEE • NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS • SAN FRANCISCO • SEATTLE • SPOKANE • WALLINGFORD

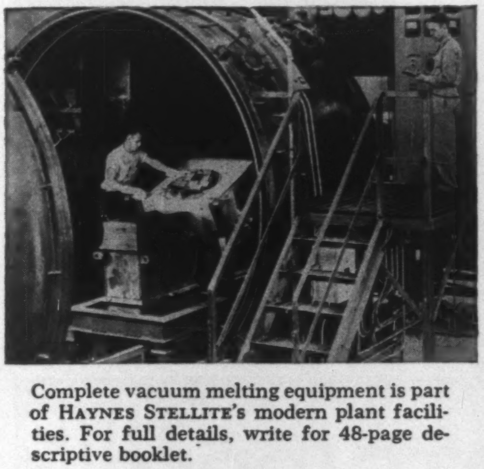


Tempering temperature's temper

Heat of 2000+ deg. F. is generated in a supersonic jet's tailpipe. So is extreme vibration.

By far the best alloy tested for this critical component is MULTIMET alloy—one of 12 HAYNES alloys helping combat heat, stress, and erosion in the jet engine, missile, and rocket field.

HAYNES alloys are relied on for use in afterburners, turbine blades, nozzle vanes, and many other high-temperature parts. All 12 HAYNES high-temperature alloys are *production* alloys and are readily available. Some are vacuum melted. Some air melted. Some are cast, some wrought, some are produced in both forms.



Complete vacuum melting equipment is part of HAYNES STELLITE's modern plant facilities. For full details, write for 48-page descriptive booklet.

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Division of Union Carbide Corporation
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UNION CARBIDE

Address inquiries to Haynes Stellite Company, 420 Lexington Avenue, New York 17, N. Y.

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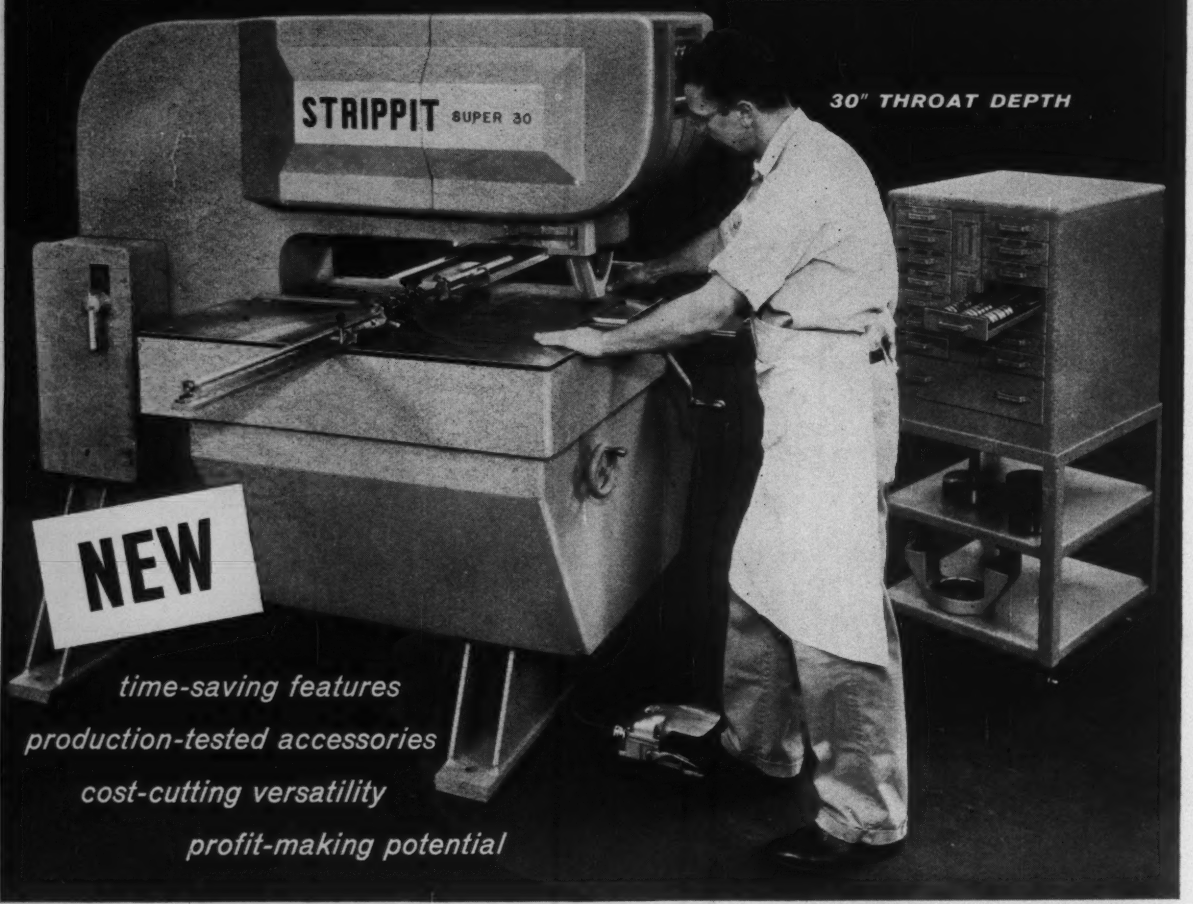
STRIPPIT SUPER 30 FABRICATOR



Larger work sizes for more efficiency...for short run punching — 30" x any length ... for production run hole duplication — 25" x 30".

Adjustable table for greater accuracy and flexibility...for punching to closer tolerances in angles, shapes and formed parts as well as flat sheets.

New, no-jam electric head eliminates down time...and the need for pressurized air. Fewer parts minimize maintenance — ensure quieter, more positive operation.

Wide range of hole punching capacities...from a 3½" hole (round or shaped) in 16 gauge to a ½" hole in ¼" mild steel.

Corner and edge notching...up to 5" x 5" in 16 gauge mild steel — 90° corners, rectangular, vee, radii and special shape edge notches.

Straight line nibbling and contour shearing...at 165-strokes per minute in ⅛" mild steel. Instant changeover from single stroke punching.

New swing-shift punch holders...quick-opening, positive-closing — for right or left-hand operation. Electrical interlock for safety.

Exclusive quick-change tooling system...using standard stock punch and stripping guide assemblies and die buttons. Size changes take less than 20 seconds.

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STRIPPIT SUPER 30

EASY CONVERSION TO A PRODUCTION PUNCHING UNIT...

with the Strippit Duplicator which can be built-in as an integral part of the Super 30 Fabricator — and the Dupl-O-Scope for punching Duplicator templates from a drawing, layout or sample part.

WRITE TODAY... for complete details, illustrated literature, price and delivery.

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packs most power

FOR HIGHEST PERFORMANCE!

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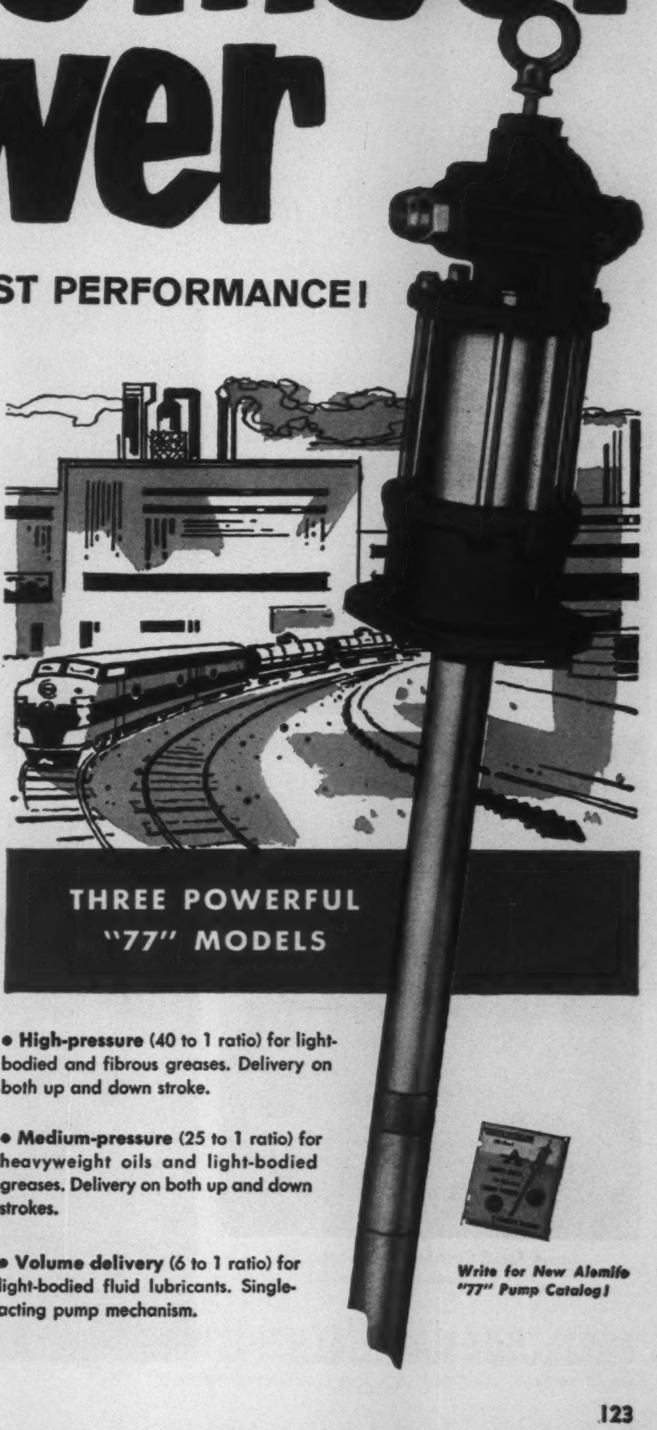

THREE POWERFUL "77" MODELS

- **High-pressure** (40 to 1 ratio) for light-bodied and fibrous greases. Delivery on both up and down stroke.
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Even out there, a friendly voice

How lonely he'll be—that first man to touch the silent, ominous surface of the moon! What shred of hope would he have, were it not for that reassuring contact with home right there in his hand?

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A SUBSIDIARY OF THE Budd COMPANY • NEWARK 22, DEL.

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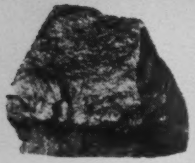
"carry the load"...



. . . Vancoram Silicomanganese! It makes structural steels tough and strong. In addition to its important alloying properties, Vancoram Silicomanganese acts as a furnace block, desulphurizer and deoxidizer, all in one. Vancoram Silicomanganese comes in every grade you need:

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HELICAL GEARED RATIOMOTORS

VERTICAL BASE MOUNTED OPTIMOUNT RATIOMOTOR drives agitator blade shaft on pigment mixers in coated textiles plant. Manufacturer says: "OPTIMOUNT adaptability permitted simplified, efficient design for our specific needs . . . at a much lower cost for the complete installation."

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YOU REDUCE PARTS COST. Since OPTIMOUNT offers a choice of many output shaft positions, you can design for direct lineup — and eliminate extra couplings, bearings, and other parts needed to "hook up" a conventional gearhead motor.

YOU SPEED PRODUCTION. Order the OPTIMOUNT you need with a phone call to your local Distributor, for delivery FROM STOCK. You can start production without delay, maintain schedules, and avoid big inventory expense.

YOU SIMPLIFY SERVICING. All OPTIMOUNT components are standardized stock parts — available promptly from over 100 BOSTON Gear Distributors throughout the U. S. and Canada.

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Order from your nearby Distributor and get any arrangement you specify — ready to install

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- **With square, round or dressed edges.**

Sandvik stocks a wide variety of qualities and sizes. In addition Sandvik has Rolling, Slitting, Edge-Filing and Hardening and Tempering facilities.

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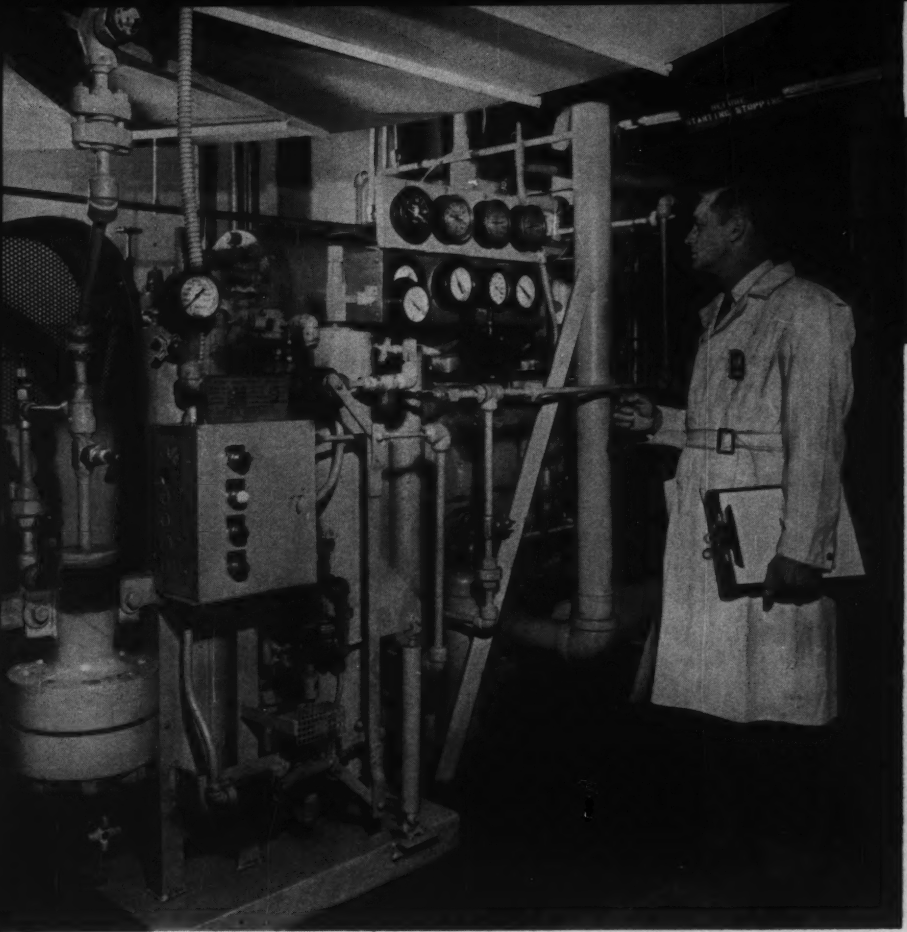
Sandvik Quality Steels

SS-138

Right
Four-stage air compressor in operation at Hamilton Standard Division of United Aircraft, Windsor Locks, Connecticut. Fire resistant Celanese Cellulubes materially reduced downtime and maintenance costs.



Below
Mr. Robert Fredrickson, Foreman, checks compressor operation.

Air cost extra thousands...

until Hamilton Standard switched to Cellulubes

At Hamilton Standard, lubrication of a 4200 psi four-stage compressor was a serious problem. Carbon deposits from petroleum lubricants made it necessary to lease a stand-by compressor, and a mechanic was assigned to round-the-clock duty to prevent valve malfunction and spring breakage. Even so, repair bills and maintenance costs ran into large sums of money, and valuable production time was lost. After switching to Cellulube 220, only routine maintenance was required. The formation of petroleum carbon residues ceased, and oil fouling of the compressed air dryer was eliminated. The former constant threat of fire and explosion was also eliminated. Cellulubes made it possible to ship back the stand-by compressor and turn over servicing of the machine to its regular department.

Cellulubes are more than a means of increasing safety. These synthetic lubricants have a cleansing action inside machinery. They give overall wear protection comparable to that of premium petroleum oils. Write for information on how Cellulubes can help you achieve greater efficiency and safety in your plant.

Celanese® Cellulubes®

CELANESE CHEMICAL COMPANY
a Division of Celanese Corporation of America
Dept. 578-A, 180 Madison Ave., New York 16, N. Y.

Canadian Affiliate: Canadian Chemical Company Limited, Montreal, Toronto, Vancouver.
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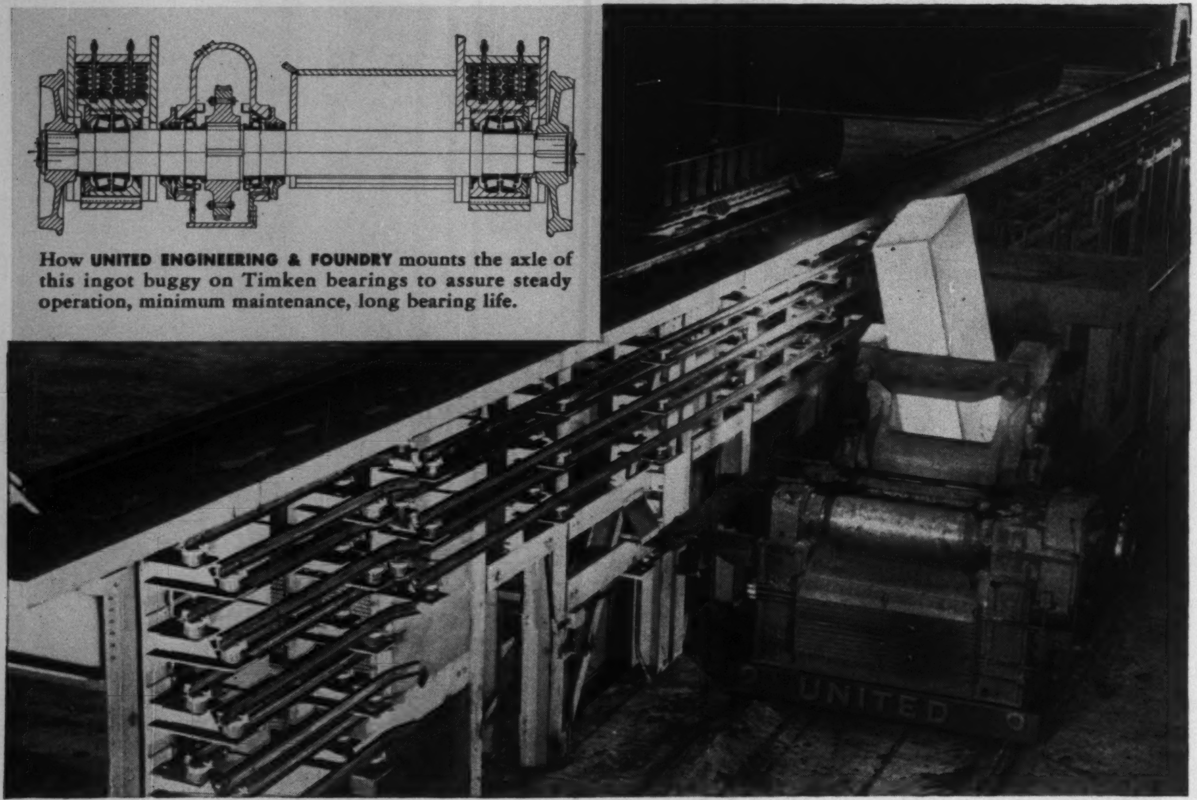
Celanese
CHEMICALS



How **UNITED ENGINEERING & FOUNDRY** mounts the axle of this ingot buggy on Timken bearings to assure steady operation, minimum maintenance, long bearing life.

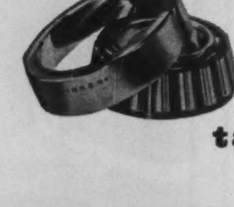
Keeps hot slabs moving fast with 27 Timken® bearings to keep it rolling

THIS United ingot buggy moves hot slabs and keeps 'em moving fast from a major steel producer's slab mill. To make sure the buggy moves the heavy loads steadily, with minimum maintenance, its builders, United Engineering & Foundry, equipped it with 27 Timken® *tapered* roller bearings. They're used on the axle drive worm shaft, axle journals, worm gear tilting drive worm shaft and tilting drive pinion shaft.

Timken bearings keep shafts aligned, gears meshing accurately. The tapered design of Timken bearings enables them to take any combination of radial and thrust loads. And full-line contact between rollers and races provides maximum stability. Cost-saving results are: shafts are held rigid; gears mesh smoothly and accurately; shaft wear is eliminated; gear wear reduced.

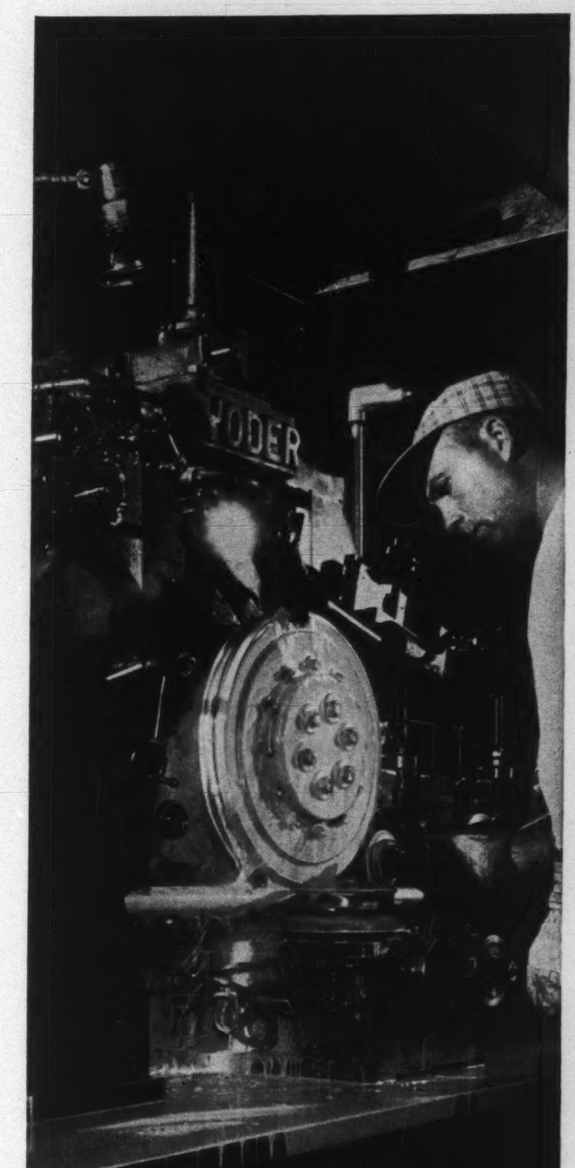
Any machine with Timken bearings gives you *extra* benefits—the benefits of Timken Company leadership in tapered roller bearing design and in engineering service. It's leadership backed by the most modern research and development facilities in the bearing industry. To get the most out of the machines you build or buy, specify Timken bearings. **When you buy Timken bearings you get . . .** 1) *Quality you can take for granted.* 2) *Service you can't get anywhere else.* 3) *The best-known name in bearings.* 4) *The pace setter in lower bearing costs.* The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

BETTER-NESS rolls on



TIMKEN®

tapered roller bearings



Yoder Tube Mills speed tailpipe production at AP Parts Corporation

The AP Parts Corporation (Toledo, Ohio), world's largest producer of replacement mufflers and tailpipes, uses 2 YODER Tube Mills to produce more than *300* ft. of 1¾", 1⅞" and 2" tubing per minute.

According to Mr. John Grindle, Plant Engineer, the two-man operated YODER Mills are vital to the production of the entire plant. "YODER Tube Mills earn their keep daily. They are easy to set up, maintain and operate . . . the welds are clean and uniform. We depend on them for constant quality, high production and minimum downtime".

The YODER Tube Mills at AP Parts exemplify the production economies and dependability of all YODER-built equipment, whether it be Pipe and Tube Mills, Cold Roll-Forming Machinery or Slitting Equipment.

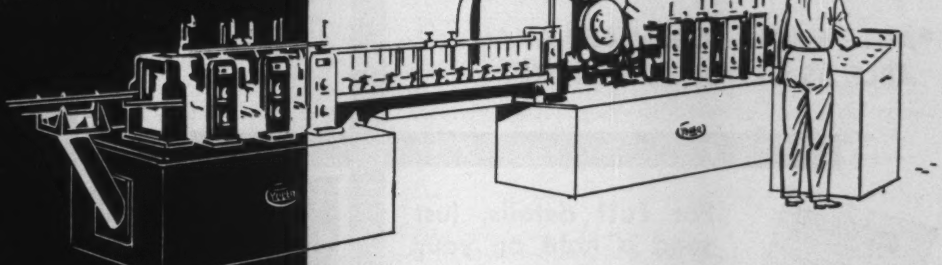
If your products require ferrous or non-ferrous pipe or tubing, from ¼" to 26" diameters, there is a YODER Mill designed to produce it economically, accurately and efficiently.

THE YODER COMPANY

5510 Walworth Avenue • • Cleveland 1, Ohio

TUBE MILLS
YODER

For complete information on YODER Pipe or Tube Mills . . . write for the fully illustrated, 88 page YODER Tube Mill Book . . . it is yours for the asking.



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PIPE AND TUBE MILLS (ferrous or non-ferrous)

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AUTOMATIC DOWNFEED AVAILABLE AS OPTIONAL FEATURE

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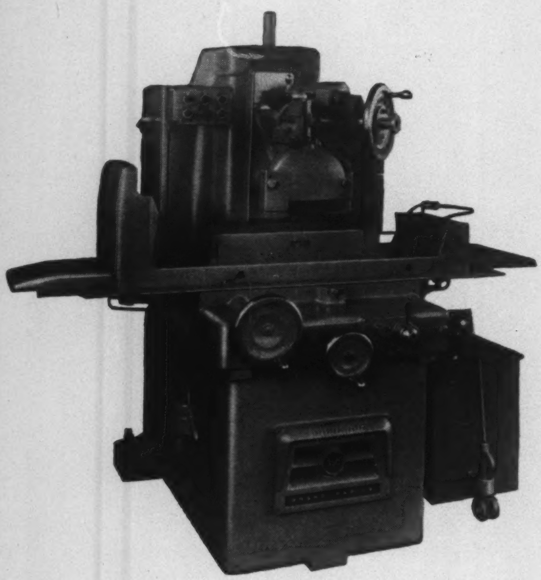

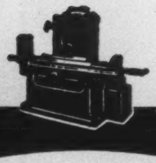

For full details, just send a note on your letterhead.

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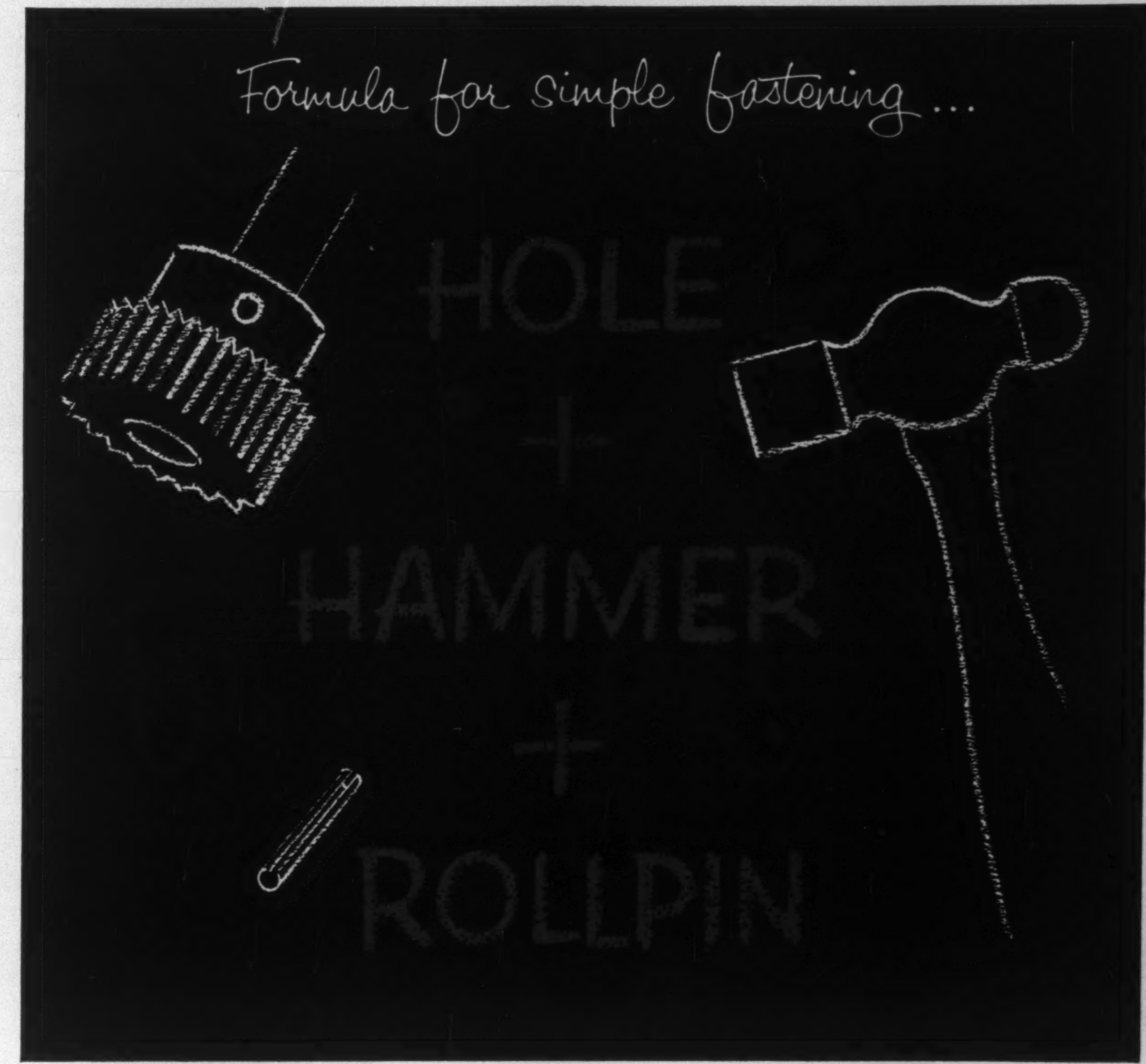

If you use locating dowels, hinge pins, rivets, set screws . . . or straight, knurled, tapered or cotter-type pins—you should look into the savings in time and money offered by the Rollpin formula. **(1)** You start with a straight production-drilled hole—no threading, peening or precision drilling is needed. (For example: permissible and typical hole tolerances for effective Rollpin installation are .125-.129 for the ⅛″ diameter pin; .250-.256 for the ¼″ pin.) **(2)** You need no more than a hammer . . . simply modified hand tooling, arbor press or hydraulic press to set the Rollpin into a secure, vibration-proof fit. **(3)** You just drive the Rollpin into the hole . . . and that's it. Spring action locks the Rollpin in place . . . regardless of impact loading, stress reversals or severe vibration. Yet it is easily drifted out . . . and can be re-used in the same hole. For information on how Rollpin can simplify your fastening jobs, fill in and mail coupon below.

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- Potassium Chromium Fluoride
- Potassium Fluoborate
- Potassium Fluoride
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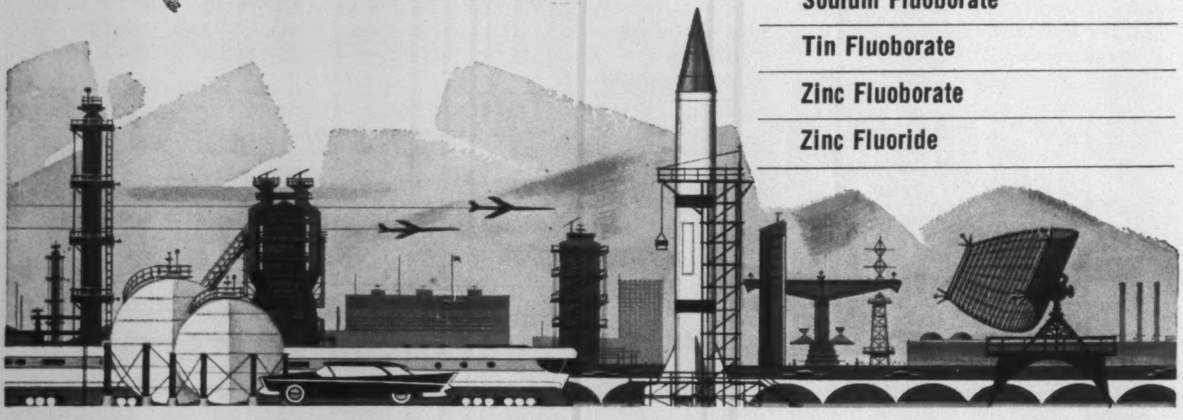
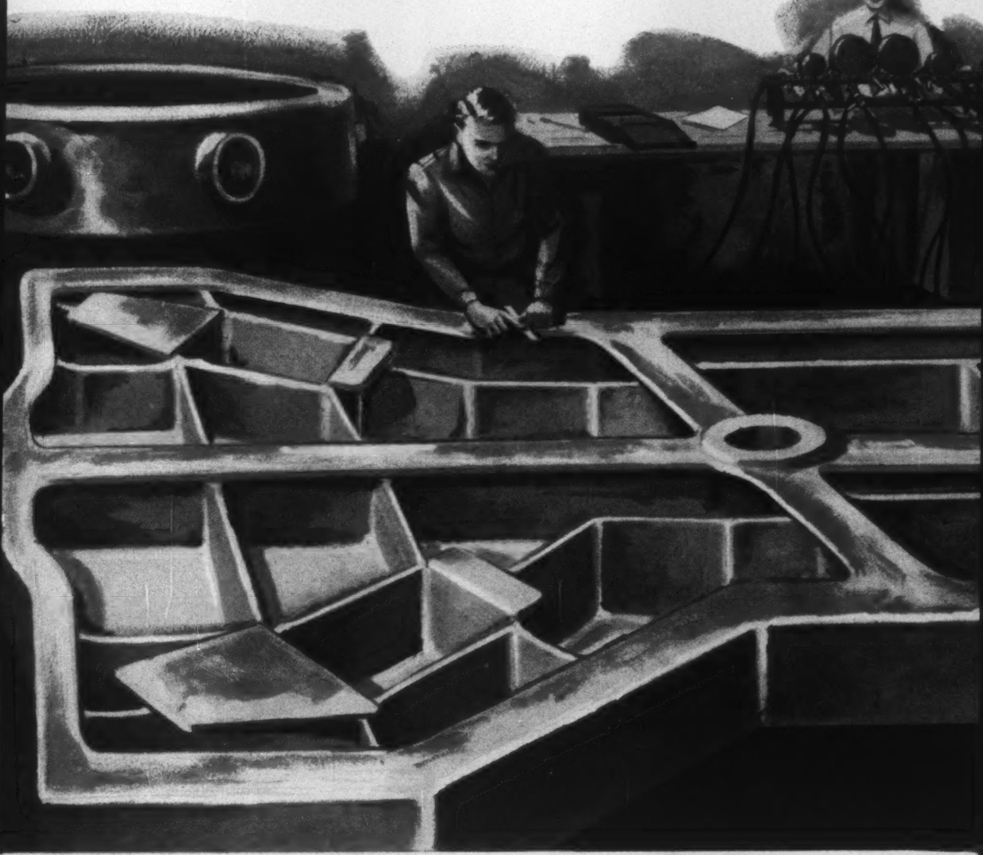
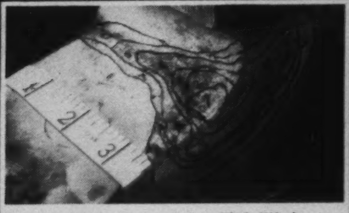
- Silico Fluorides
- Silicon Tetrafluoride
- Sodium Fluoborate
- Tin Fluoborate
- Zinc Fluoborate
- Zinc Fluoride

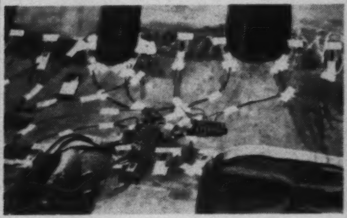


...where industrial progress is cast in steel





Locating high stress points with brittle lacquer.



Determining stresses with strain gages.

Dynamic testing under service conditions.

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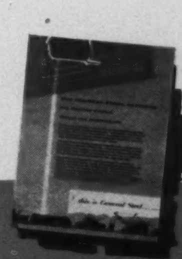
General Steel's activities extend far beyond the manufacturing process . . . into the area of checking existing designs for product improvement, and verifying new designs.

For example, the General Steel test laboratory employs the latest stress analysis techniques and the most modern equipment to conduct brittle lacquer and strain gage analyses under controlled atmospheric conditions. Multi-directional static load tests, dynamic tests under actual service conditions, and many other types of tests are conducted to develop better cast steel structures and steel castings for use in the cast-weld and composite structures of your product.

This assurance of quality from planning to performance is available to you. Let us demonstrate how you can use it . . . profitably.

Write for folder **How General Steel Castings Can Improve Product Design and Performance.** General Steel Castings, Station 201 Granite City, Illinois



GENERAL STEEL CASTINGS

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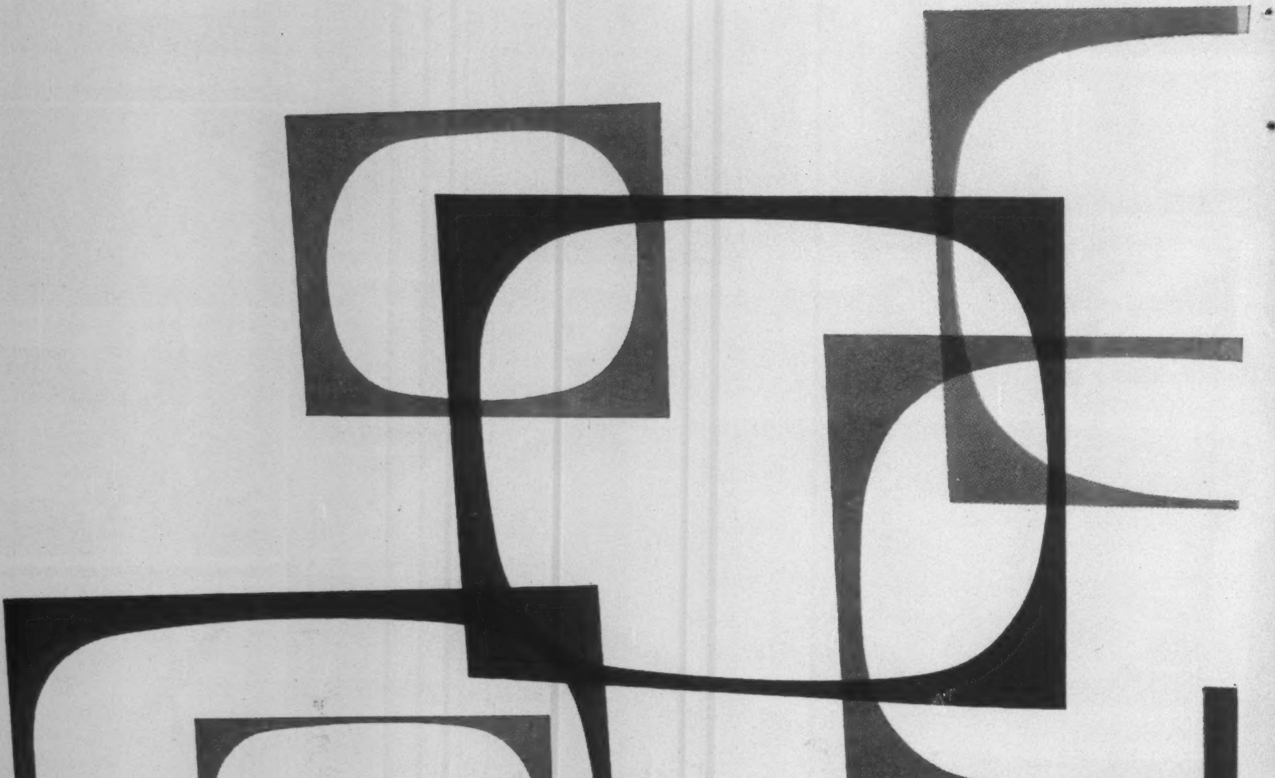


Weirton Steel is a division of **NATIONAL STEEL CORPORATION**

Better products through better methods and steels

How zinc-coated steels improve the profit picture in TV-set manufacturing

Solid savings in TV manufacturing often come in small ways. Take the case of the TV masks once made of cold-rolled steel and painted on both sides to stave off corrosion. When the switch was made to Weirzin electrolytic zinc-coated steel, protective painting bowed out. Because Weirzin's uniform, corrosion-resistant surface is impervious to heat and humidity, the mask's interior is left as is. The exterior is painted purely for decoration—and with Grade A results since Weirzin comes chemically treated to provide a superior bonding surface for paint. Weirzin electrolytic zinc-coated steel is but one of many fine steels produced by Weirton Steel Company—improving products, methods *and* profits throughout industry.

WEIRTON STEEL COMPANY

WEIRTON STEEL
Weirton, West Virginia

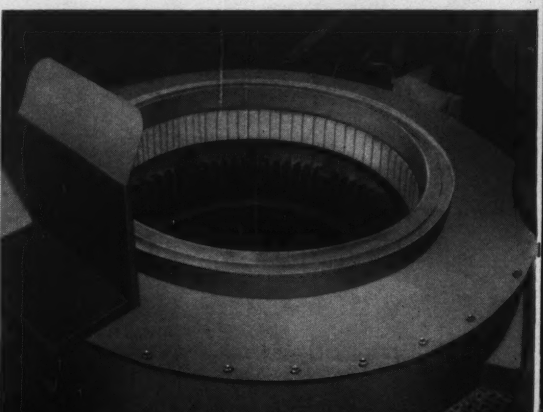
This Lindberg Furnace, Model CT3848-A, is being used at Ingersoll Milling Machine Company, Rockford, Illinois, for hardening Ingersoll inserted blade milling cutter bodies and also for gas carburizing. It is equipped with Lindberg's exclusive CORRTHERM electric heating elements. Temperature range 1850° to 2000°F.

THIS VERSATILE LINDBERG FURNACE BELONGS IN MOST ANY METAL WORKING OPERATION

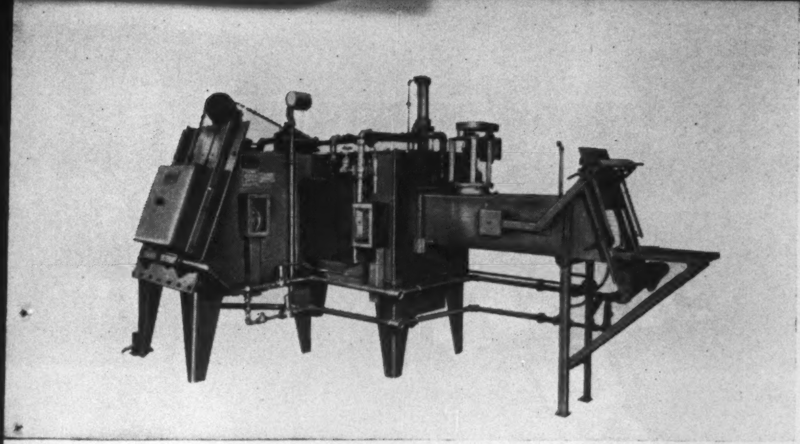
Heat treating installations across the country, captive or commercial, have found the versatility and dependability of this Lindberg furnace, either electric or fuel fired, a great production asset. Used at Ingersoll for hardening and carburizing, it is also ideal for a variety of heat treating needs including normalizing, annealing and tempering. This furnace occupies little floor space, handles a large volume of production and its rugged construction keeps maintenance costs uniformly low. At Ingersoll, it is one of several Lindberg furnaces in regular operation. Others include pit and box type Lindberg Cyclones and an L-type Furnace. Atmospheres are provided by Lindberg Hyen Generators.

Lindberg has developed a wide variety of equipment for any industrial heat treating requirement. We provide everything from individual furnaces to complete, automated heat treating installations. These can either be factory-built or installed in your own plant. For the most satisfactory answer to any heat treating problem see your local Lindberg field representative (consult your classified phone book) or write direct to Heat Treating Division, **Lindberg Engineering Company,** 2452 West Hubbard Street, Chicago 12, Illinois. Los Angeles Plant: 11937 South Regentview Avenue, Downey, California. In Canada: Birlefco-Lindberg, Limited, Toronto.

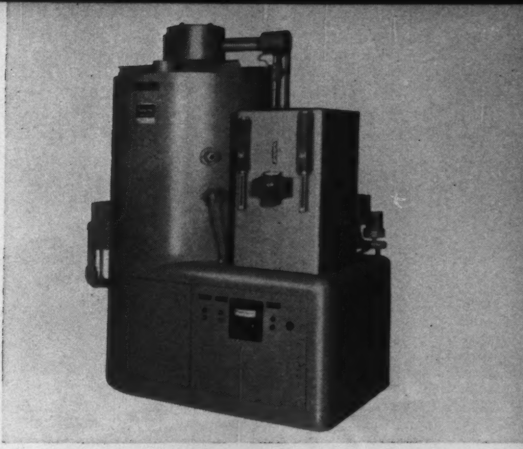
Fixture being loaded with work while furnace is treating another load. Treated load will be removed and new load inserted quickly and easily.



CORRTHERM heating elements operate at extremely low voltage so heat leakage through carbon saturation is eliminated and shock or short hazard prevented. Makes possible use of electricity for carburizing without furnace retort.

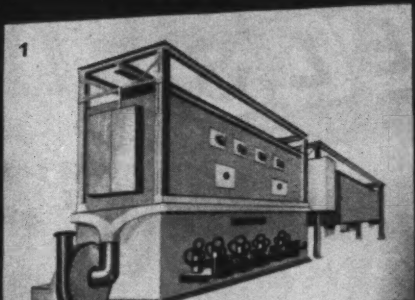


The Lindberg installation at Ingersoll includes one of our L-type Furnaces, ideal for treating high speed steel.



Atmospheres for Lindberg furnaces at Ingersoll are provided by Lindberg's Hyen Generator, a fully automatic process for producing endothermic atmospheres.

THERE'S LINDBERG EQUIPMENT FOR EVERY INDUSTRIAL HEATING NEED



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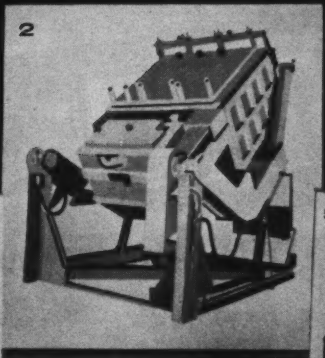

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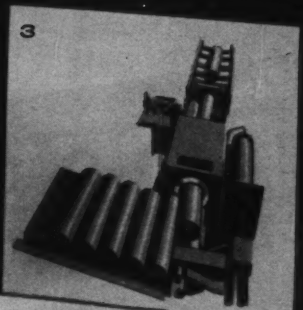

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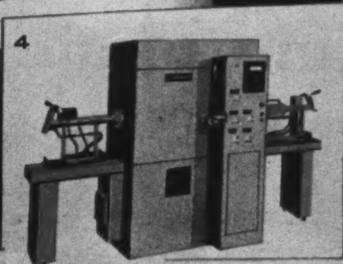

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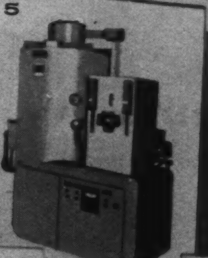

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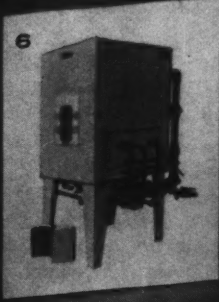

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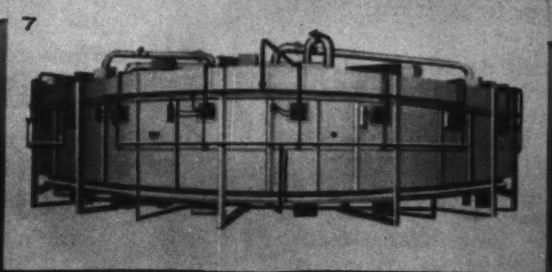


7

8

1 **Salt Bath Furnaces:** Complete line of Lindberg-Upton equipment for all types of salt bath treatment. Shown: Installation for aluminum dip brazing.

2 **Melting and Holding Furnaces:** Equipment for any non-ferrous metal requirement including electric resistance and induction reverberatories, crucible and two chamber induction units. Shown: 350 KW Induction Furnace with 30,000 lb. capacity.

3 **High Frequency Units:** Complete range of induction heating units and furniture. Shown: New Induction Billet Heater for aluminum extrusions.

4 **Pilot Plant Equipment:** Complete group of intermediate sized furnaces for pilot plant and small production application. Shown: New Graphite Tube Furnace, temperature range 2500°F. to 5000°F.

5 **Atmosphere Generators:** Generators for all required furnace atmospheres. Shown: Hyen Generator for endothermic atmospheres.

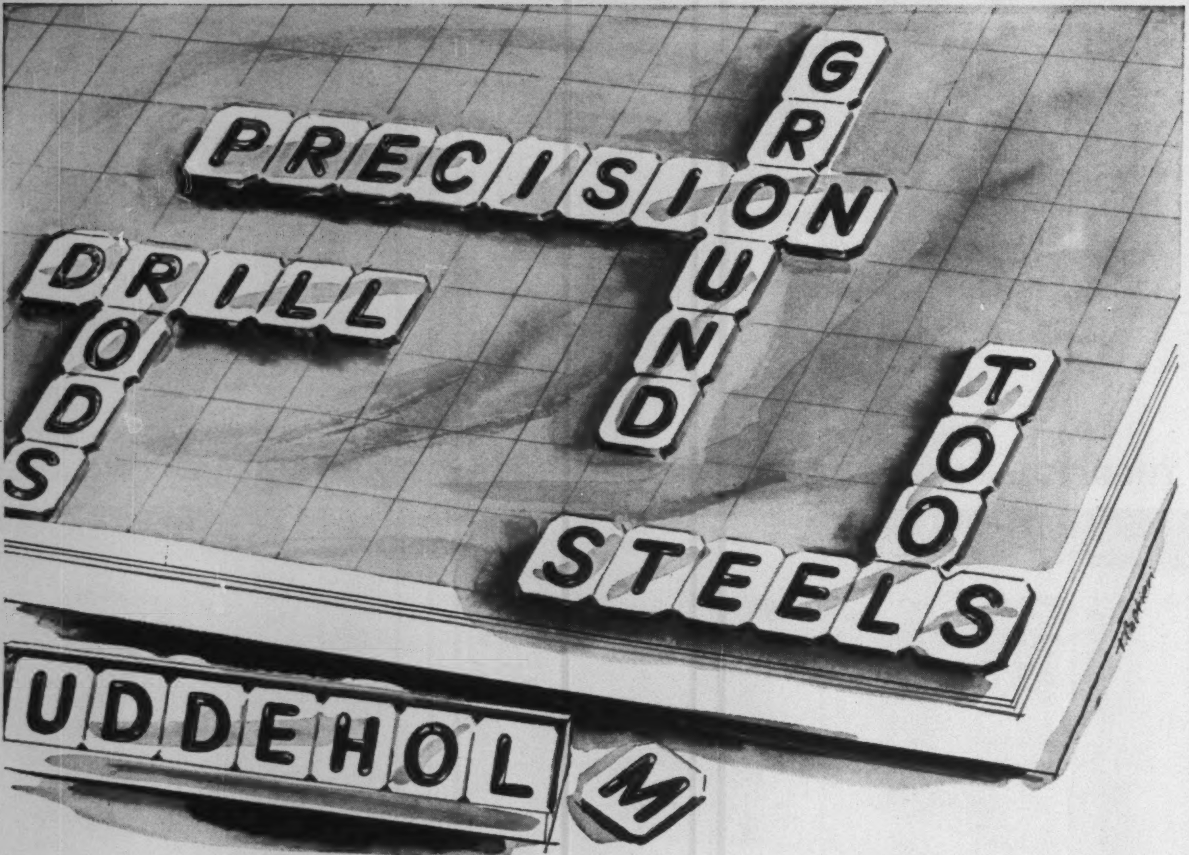
6 **Ceramic Kilns:** All types of kilns: automatic, atmosphere controlled, high temperature, tunnel and periodics. Shown: Periodic Kiln, temperature range to 3250°F.

7 **Heat Treating Furnaces:** For every requirement, large or small, electric or fuel fired, factory built or field-installed. Shown: Rotary Hearth Furnace field-installed by Lindberg Industrial Division.

8 **Laboratory Furnaces:** Complete line of laboratory furnaces from simple hot plates to specialized research units. Shown: Versatile, wide temperature range Laboratory Box Furnace.

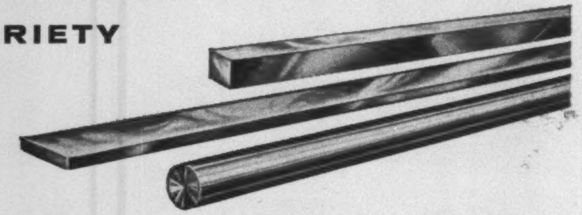
For full information on any type of Lindberg equipment see your local Lindberg field representative (look in your classified phone book) or write to Lindberg Engineering Company, 2452 W. Hubbard Street, Chicago 12, Illinois

LINDBERG heat for industry



. . . completes the picture

with QUALITY—QUANTITY—VARIETY



Satisfy *all* your tool steel requirements at your Uddeholm Specialty Steel Service Center, where you can always receive expert technical aid in the selection and use of just the right type for your needs.

Precision Ground Tool Steel—flatstock—always free from decarburization—supplied in sizes close to or exactly that of the finished tool or die with extremely close dimensional tolerances. UHB 46 (SAE-01) is stocked from 1/64″ to 2″ thick—1/2″ to 14″ wide; UHB 151 (SAE A1) from 1/8″ to 2″ thick by 1″ to 10″ wide . . . in square or rectangular stock—18″ long. Many sizes stocked in 36″ lengths. Uddeholm, *producers of the finest tool steels,* assures you of the highest quality standards!

Drill Rods—stocked in UHB, UHB "Extra" (SAE W1), UHB 46 (SAE 01), and Tri-Mo (SAE D2) —36″ lengths from Number 80, (.013″) to 2″ diameter.

One Source For All Tool Steels—In addition to precision ground flatstock and drill rod, Uddeholm Specialty Tool Steel Service Centers stock Swedish Quality hot-rolled bars, hollow bars, special shapes, in air, oil, and water hardening grades . . . over 2800 combinations of grade, size and analysis from which to select.

Write today for Stocklist No. 13—Free Technical Literature

UHB

TOOL AND DIE STEELS
COLD ROLLED SPRING
STEELS

UDDEHOLM COMPANY OF AMERICA, INC.

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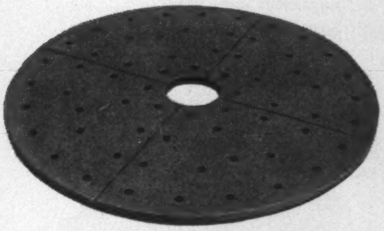
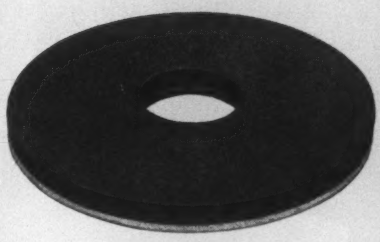
Detroit: Warren H. Nugent, 17304 Lahser Road, KEnwood 5-6340 **Philadelphia:** Frank T. Campagna, 1418 Walnut St., PEnnypacker 5-2114
TOOL STEEL WAREHOUSE DISTRIBUTORS: Rockford, Ill.: Rockford Industrial Steel Service, 2229 Twenty-Third Ave. WOodland 3-5463

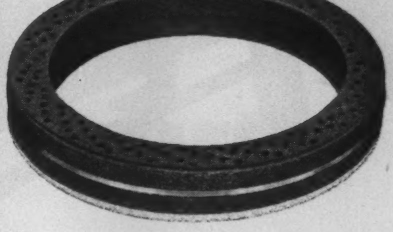
Wide variety of Gardner abrasives assures top performance in all surfacing operations



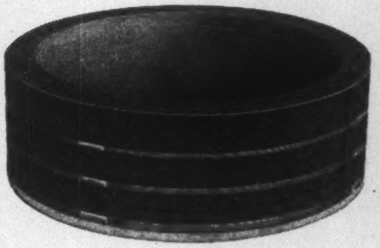
Segmental Wire-Lokt® discs for large horizontal grinders



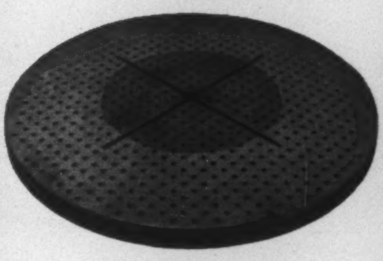
Smooth faced Wire-Lokt discs for general purpose grinding



Narrow face disc with corrugations for cool cutting



Cylinder wheels for use on most popular types of vertical spindle grinders



Combination grade and face with radial lines for even wear and better coolant distribution

Cylinder wheels with square centers for fast stock removal on large areas

range of disc sizes

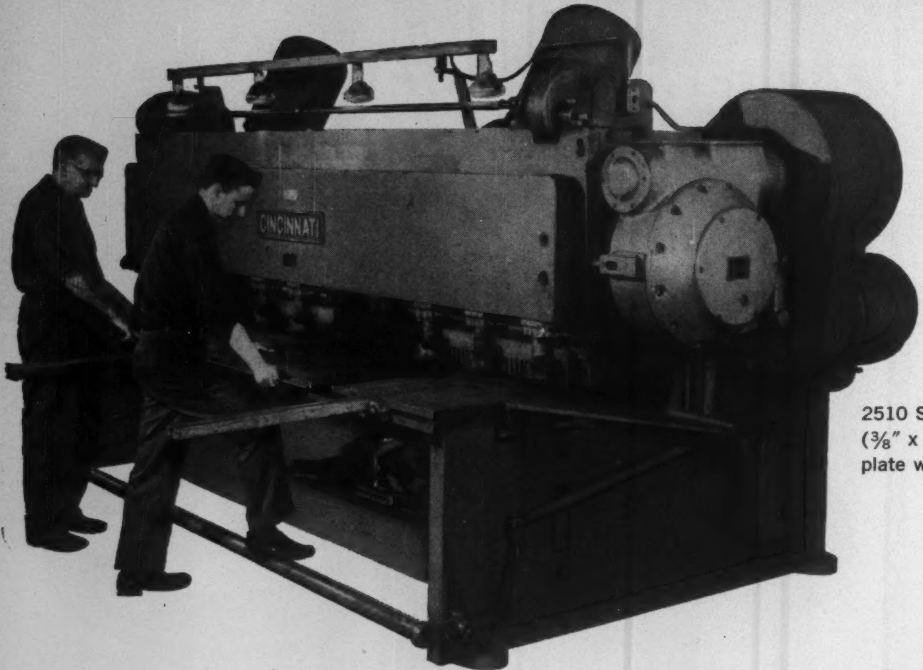
	diameter	thickness
regular disc	10″ to 48″	1″ to 3″
segmental disc	53″ to 84″	1″ to 3″
cylinder wheel	11″ to 32″	4″ or 5″
square center cylinder wheel	18″ & 20″	4″ or 5″

For a review of your flat surface grinding operations, call your Gardner Abrasives Specialist today.

GARDNER

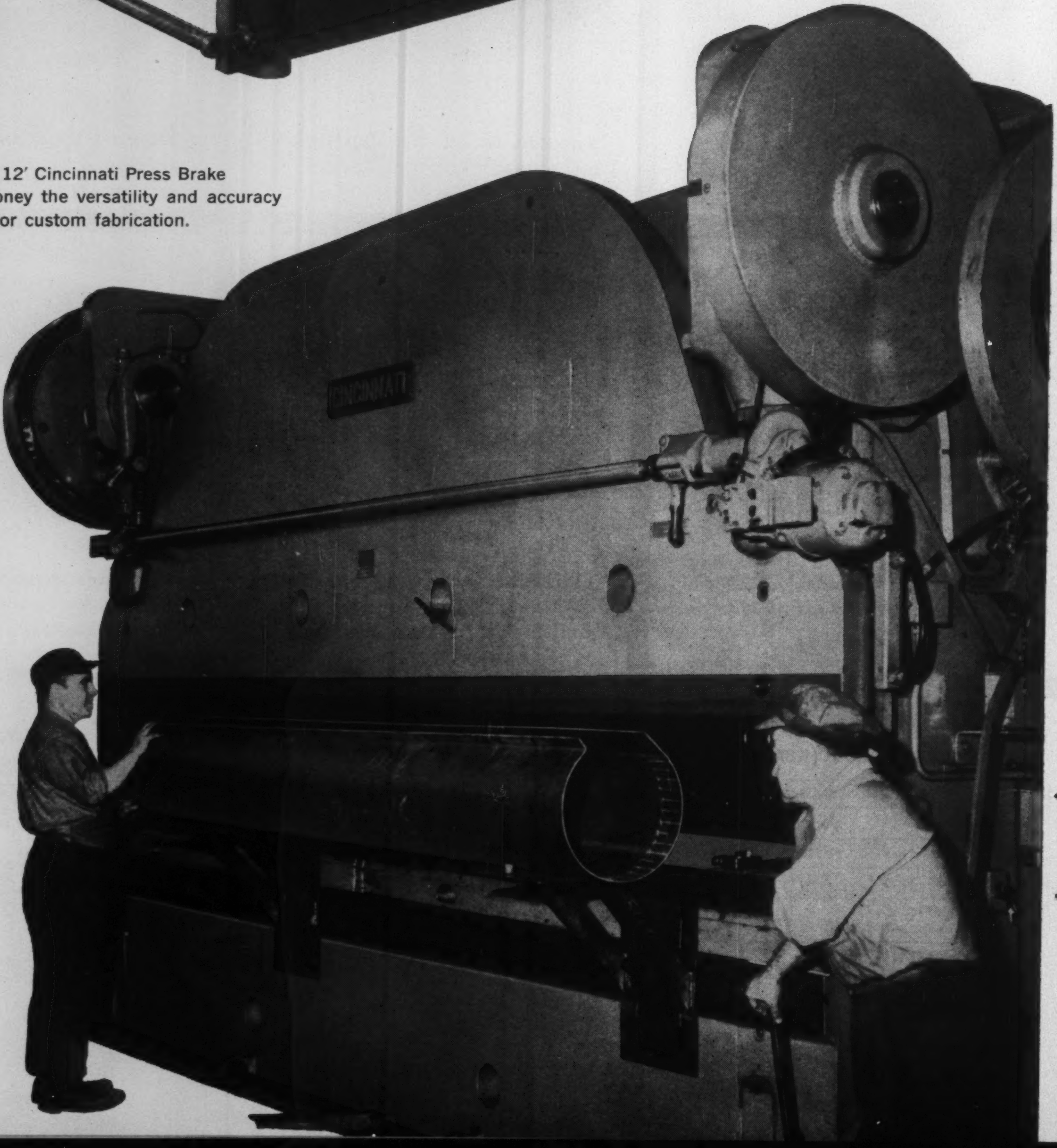
abrasive discs

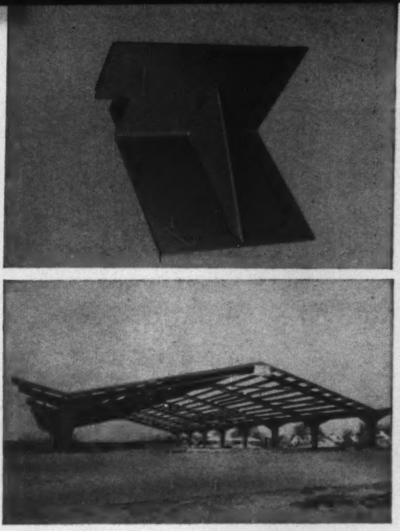
BELOIT, WISCONSIN


CINCINNATI

2510 Series Cincinnati Shear ($\frac{3}{8}''$ x 10′ capacity) cuts steel plate with consistent accuracy.

13 Series 12′ Cincinnati Press Brake gives Mooney the versatility and accuracy required for custom fabrication.


CINCINNATI



"From brackets to buildings," Mooney Iron Works Co. fabricates steel products on maintenance-free Cincinnati Press Brake and Shear.

"Not a penny's worth of maintenance since 1953!"

"We haven't spent a penny on maintenance of our Cincinnati® Press Brake and Shear since we got them in 1953," says John L. Mooney, President of Mooney Iron Works Co., Cleveland.

Yet these two machines have been worked hard, day after day, in Mooney's fabrication of structural steel products which range "from brackets to buildings."

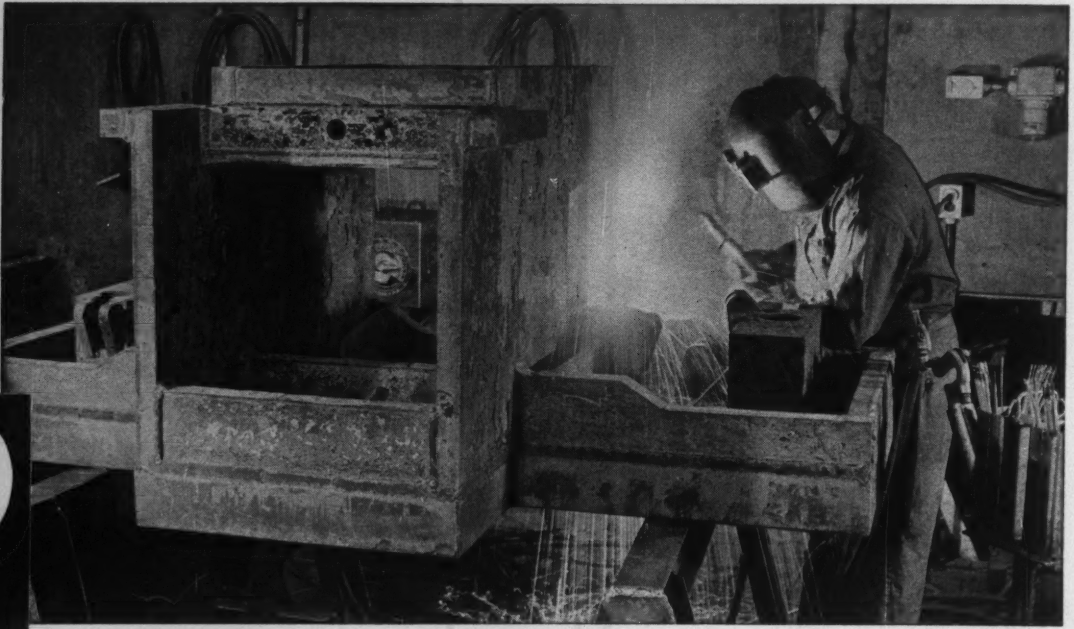
By keeping costs down, this extra-rugged Cincinnati stamina helps Mooney compete aggressively and get new business. You can earn these same profits; put Cincinnati Press Brakes and Shears to work in your shop.

Write Dept. **B** for Bulletin CS-4, which covers all Cincinnati equipment.

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.

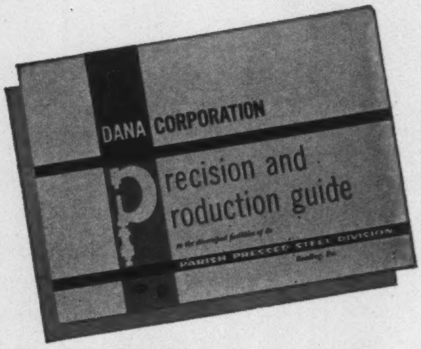


Cut YOUR Production Costs With Parish Weldments!

Parish has the overhead handling facilities, movable partitions and available floor space to handle *any* of your weldment jobs—and cut your production costs! For years Parish welders have skillfully handled jobs from one-of-a-kind to volume production in a wide variety of metals and alloys, ranging in thickness from forty-eight thousandths up to several inches.

At Parish every conceivable welding method is being combined with rigid engineering quality control to fabricate stronger, lighter, more accurate weldments—at lower cost to you.

Parish weldments completely eliminate the inherent danger of "blow holes" which often boost production costs of iron castings.



An illustrated booklet describes the diversified facilities available to you at Parish. Write now for your free copy.

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PARISH PRESSED STEEL

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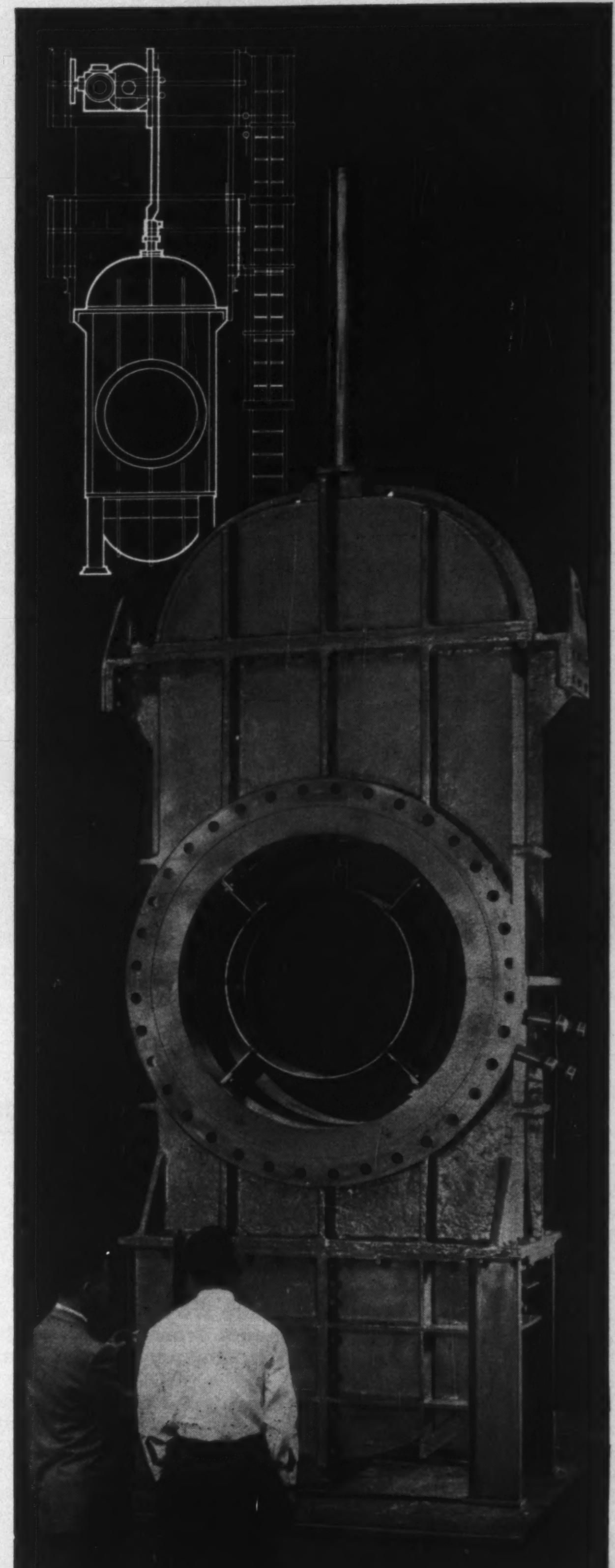


NEW

fastest way of changing blast furnace stoves

BAILEY

WATER-COOLED GAS BURNER SHUT OFF VALVE

Full Open to Full Closed in 11 Seconds

Valve disc and body are water cooled to prevent overheating while the stove is on blast. Motor-operated drive unit is located on a platform above the valve, well clear of stove heat. This valve is bolted tight to the burner and stove saddle flange, thus preventing leaks at the burner. *Write for Bulletin GB-100.*

WILLIAM M. BAILEY COMPANY

1221 BANKSVILLE ROAD, PITTSBURGH 16, PA.

Trailer axles take shape as automatic butt welder upset flash welds spindles to each end of 40-inch lengths of Pittsburgh Steel Co.'s mechanical tubing at Kenton, Ohio, plant of Rockwell-Standard's Transmission and Axle Division.

An Axle Axiom: Long Service Life

Pittsburgh Steel Company's Seamless Tubes Give Years of Service in Rockwell-Standard Corp.'s Trailer Axles

Mechanical tubing from Pittsburgh Steel Company covers a lot of ground—in truck trailer axles.

Pittsburgh Steel is a prime supplier of mechanical tubing to the Kenton, Ohio, trailer axle plant where the Transmission and Axle Division of Rockwell-Standard Corp. makes trailer axles for every major trailer manufacturer.

• **Uses C1040 Grade Tubing**—Rockwell-Standard uses AISI C 1040 grade hot rolled tubing, ranging from 4-inch outside diameter with a ⅜-inch wall thickness to tubing 6 inches in diameter with ½-inch wall.

Typical tubing shipped to Rockwell-Standard is made of fine grained steel in a uniform hardness range which enables the customer to develop the final physical properties he wants by heat treatment.

Pittsburgh Steel tubing performs satisfactorily in Rockwell-Standard's processing operations and satisfies the ultimate user—the trailer manufacturer—because we meet these requirements from tube to tube and from shipment to shipment.

Hardness is a prime requirement because lack of uniformity would require more costly operations at Rockwell. With Pittsburgh Steel tubes, heat treating can be standardized with predictable results.

Weldability scores high. Long service life of trailer axles demonstrates the weldability of Pittsburgh Steel's tubing. With an average of

10 welds in every axle, welds have to be good. Strength and porosity tests prove they *are* good.

Freedom from scale helps promote predictable results from heat treating. Scale would produce steel with different rates of hardness after heat treating. No de-scaling operation is necessary with Pittsburgh Steel tubes.

Uniformity of wall thickness helps to prevent warping of axles in oil quenching and eliminates re-straightening in many cases or holds such operations to a minimum.

- **Tubing first is cut to length** by Rockwell to make axles which will track either 70 inches or 71½ inches, both standard widths. Forged spindles then are flash upset welded, one on each end of the tube. Welds are made simultaneously.

Next, tube and spindle assemblies pass through a high heat furnace on a moving conveyor. For the two hours each assembly is in the 60-foot long furnace it is subjected to a temperature of 1500 degrees F. Each 1½ minutes, an assembly emerges from the furnace to be oil quenched.

To temper the assemblies to the desired Brinell hardness, each passes through a draw furnace where it soaks for an hour in 1000 degrees F.

Rockwell-Standard wants a rating of 269 to 321 for spindles and 218 to 269 for tubing.

Axles then are cleaned by shot in a Wheelabrator and moved to the Machine Shop. Spindles are machined to final contours, welding flash is removed and threads are machine rolled.

- **After accessories,** like spider brackets, diaphragm brackets and cams are welded to the axle, stress relief follows to ease strains set up by welding. An hour's treatment at 900 degrees F. does the trick.

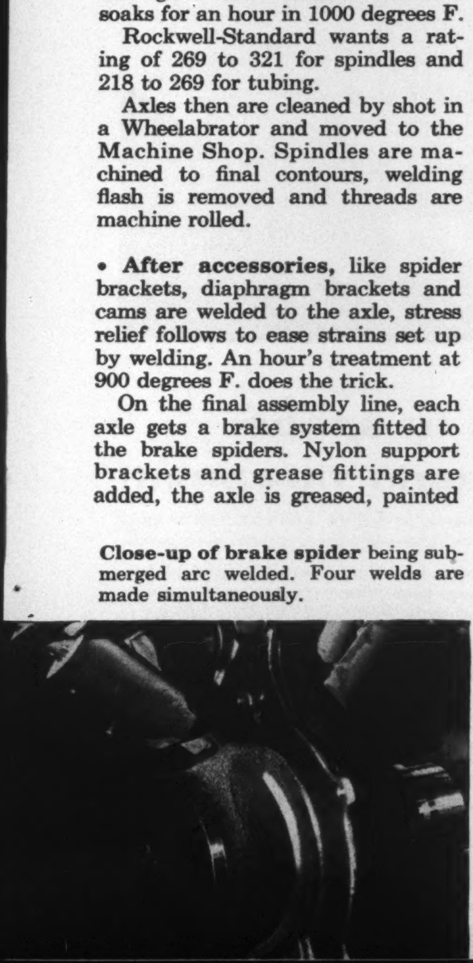
On the final assembly line, each axle gets a brake system fitted to the brake spiders. Nylon support brackets and grease fittings are added, the axle is greased, painted and moved to the shipping platform.

You don't have to be a manufacturer of axles to enjoy the same benefits that Rockwell-Standard gets from Pittsburgh Steel tubing.

Any tube user who wants to lower production costs while making a better product can profit by using Pittsburgh Steel tubular specialties.

You get the physicals you want and you can expect better performance in fabrication. Talk to a Pittsburgh Steel man today. You'll find him in one of the district offices listed below.

Pittsburgh tubing, five inches in diameter, is being ground to 4.880 inches to meet specifications.



Close-up of brake spider being submerged arc welded. Four welds are made simultaneously.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company
Los Angeles, California
Chicago Tube & Iron Company
Chicago, Illinois
Cleveland Tool & Supply Co.
Cleveland, Ohio
Drummond McCall & Co., Ltd.
Montreal, Quebec, Canada
Edgcomb Steel Company
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Morse engineers look to space from a down-to-earth viewpoint!

Sky is never the limit with the research and development staff working with the broad facilities at Morse.

Morse has grown up with the automotive industry. Its specialists have worked with designers and engineers in developing and perfecting the products of their imagination.

For more than 60 years, Morse has specialized in the science of kinematics. Perhaps its best known products are basic chain drives, gear reducers, couplings, and clutches in more major fields than you could count on the fingers of both hands.

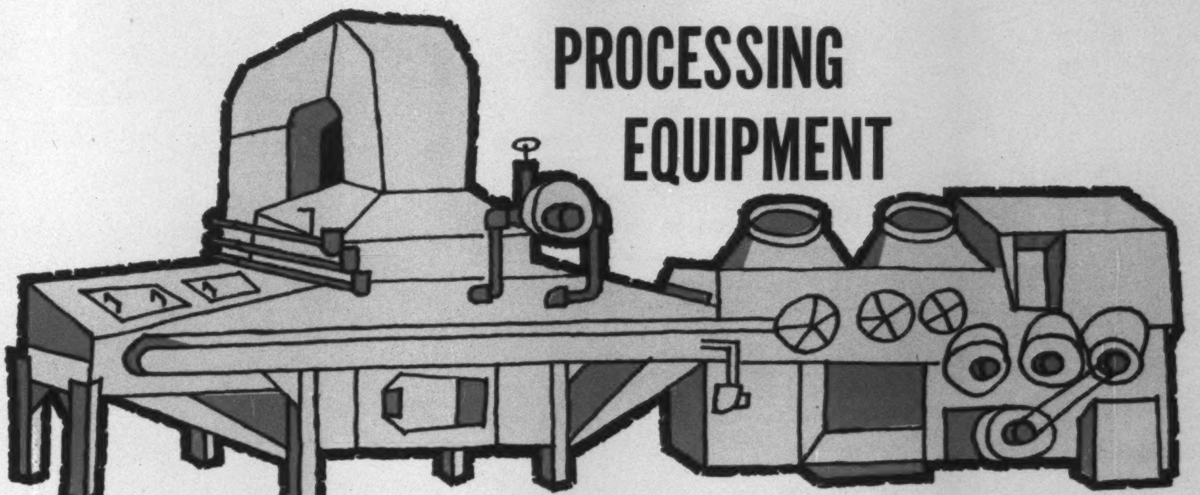
Morse engineers, supported by Borg-Warner's ultra-modern research laboratory, can now offer a better way of giving your ideas a boost, and provide down-to-earth solutions to your problems in the race for space. Consult: Morse Chain Company, Dept. 33-10, a Borg-Warner Industry, Ithaca, N.Y. In Canada: Morse Chain of Canada, Ltd., Simcoe, Ontario.

World's largest manufacturer of precision parts

MORSE BW

A BORG-WARNER INDUSTRY

why it pays to buy METAL PROCESSING EQUIPMENT



from a company that makes METAL PROCESSING CHEMICALS

Pennsalt
Chemicals

Getting full return on every dollar you invest in your metal finishing line depends on your equipment and chemicals working together *as a team.*

This teamwork is just what Pennsalt's *System Approach* makes sure you get. It assures you of equipment engineered to get the most mileage out of modern, specialized chemicals . . . and chemicals that give consistent, specification-meeting performance in the equipment.

Pennsalt
Chemicals

This approach is unique with us, because we're the only supplier who provides complete lines of both metal preparation equipment and chemicals . . . and renders continuing, on-the-spot service on both from coast to coast.

The Pennsalt System Approach is unique, too, in the way it consistently pays off in high-volume production, top quality, low costs. We'll be glad to show you how it can work for you. Write for free Booklet 306, "The Pennsalt Metal Preparation Service Plan".

Pennsalt Metal Finishing Equipment
- Washers of all types
- Automatic coating machines
- Automatic phosphatizing machines
- Automatic pickling machines
- Drying and finish bake ovens
- Paint spray booths
- Special equipment
- Complete finishing systems

Pennsalt Metal Processing Materials
- Cleaners for all metals
- Etchants and brighteners
- Descaling and pickling compounds
- FOSBOND® phosphating agents
- FOSCOAT® pre-lubricant coatings
- FOSLUBE® drawing lubricants
- DRAWCOTE® deep-drawing lubricants
- Paint strippers and strippable vinyl coatings

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WALDRICH
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of Heavy Workpieces in one set-up . . . on one machine

- Reduces machining time
- Reduces set-up time
- Increases over-all accuracy
- Cuts manufacturing costs

Write for details

Waldrich Siegen combined planing and milling machines

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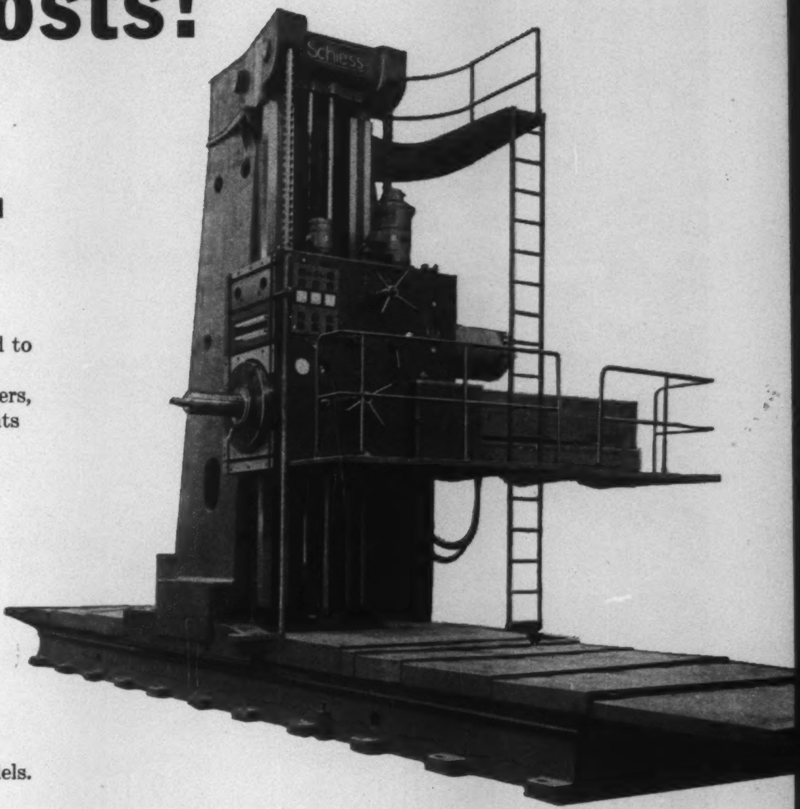
watch these giant workers chip away costs!

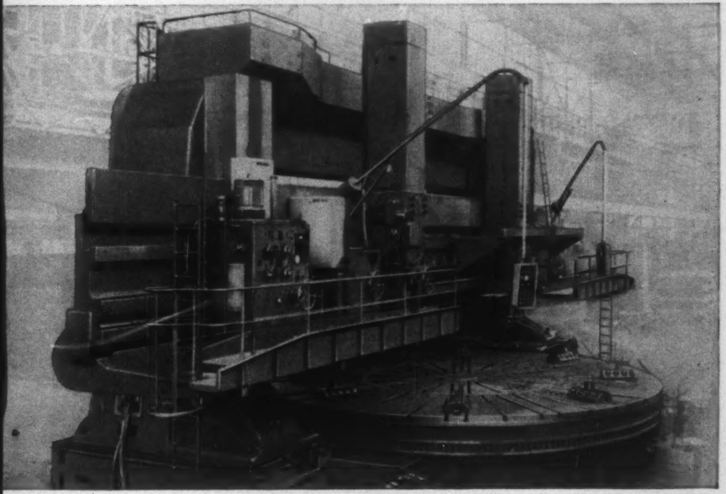


This 8⅞ in. SCHIESS model BF horizontal boring and milling machine . . .
now completely redesigned with many innovations. Here are a few . . .

Two individual drives—gear-drive for roughing, belt-drive for finishing. Belt-drive particularly suited to high-speed machining with carbide tools. New tool clamping device—does away with draw keys, hammers, drifts and binding screws. All spindle-slide movements controlled from easily accessible operating platform (or from pendant station or portable control panel, if desired). Special main-drive belt requires no readjusting. Column, spindle-slide and boring spindle may be adjusted at rapid traverse.

Spindle diameters, 6-5/16″ to 8-7/8″. Maximum diameter bored, 59″—faced, 79″.

It takes Europe's largest builder of heavy machine tools, Schiess, to turn out giants like these. Parts and service as close as Pittsburgh. And an American Schiess engineer will be happy to help you size up these heavy producers for your heavy production needs. Write for catalogs and complete specifications on all Schiess BF and K models.



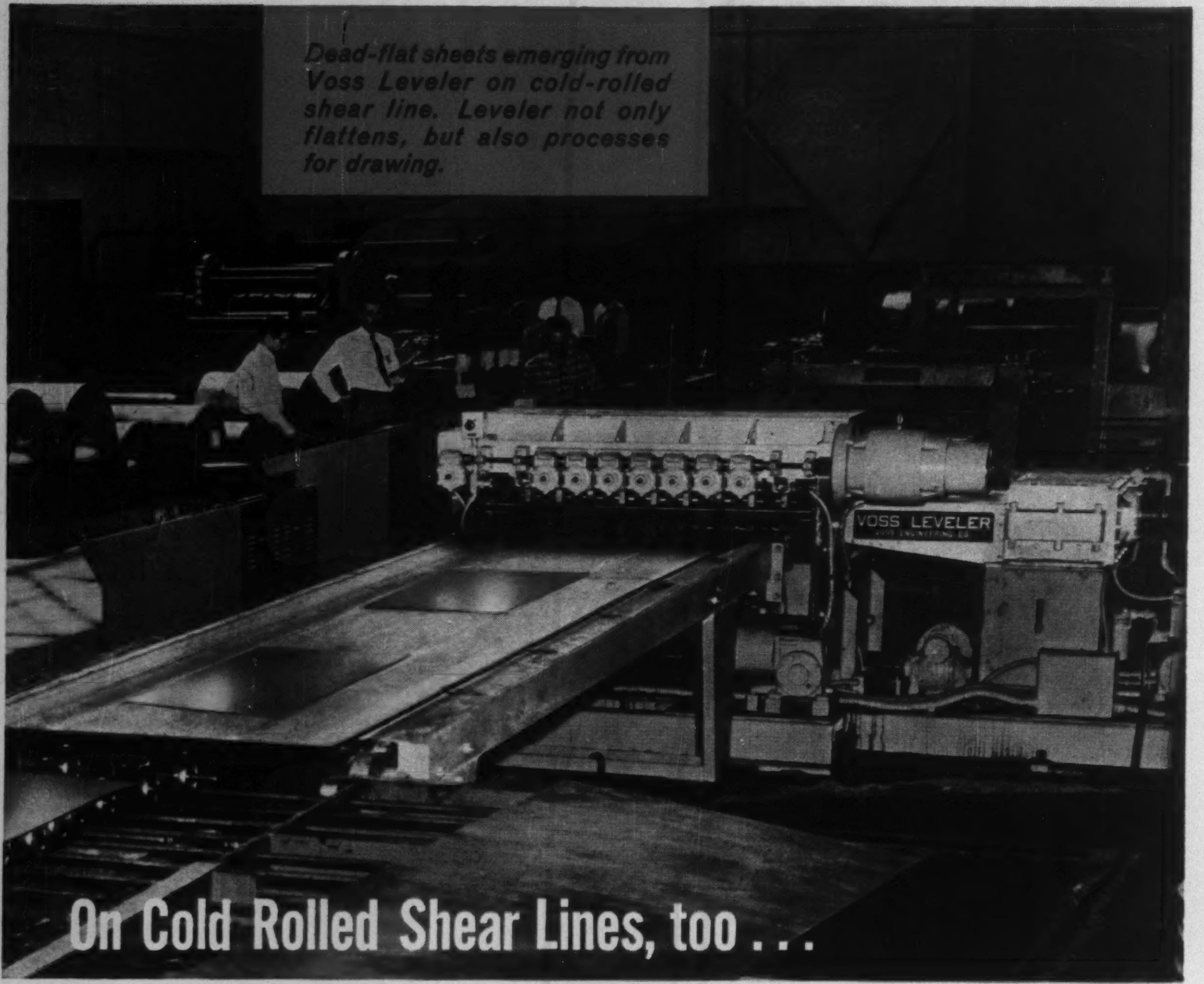
This 32 ft. SCHIESS model GK vertical boring and turning mill . . .
Look at all these new features of the most modern vertical boring mill of its type: Two ram heads on the rail, one of which is tracer-controlled. One milling head on the rail which can be parked on the left side rail extension. Dual tables—one 15′ table on the inside, a 32′ table on the outside. Each table has independent drive, or both tables can be used together and synchronized as one. Table equipped with indexing device to be used for indexing layout work. Machine will swing a maximum diameter of 40′. Rapid traverse motions with pushbutton control of changeover from feed motion to independent power traverse. Electro-mechanical locking of cross-rail to columns. Fingertip speed control—counter-balanced cross-rail and side-head—completely enclosed swiveling octagon rams—pendant control—automatic lubrication.

Have you ever seen anything like it?

SCHIESS

AMERICAN SCHIESS CORPORATION

1232 Penn Avenue, Pittsburgh 22, Pa.



Dead-flat sheets emerging from Voss Leveler on cold-rolled shear line. Leveler not only flattens, but also processes for drawing.

On Cold Rolled Shear Lines, too . . .

VOSS LEVELERS EQUAL OR EXCEED STRETCHER-LEVEL FLATNESS

Voss Inverted Roller Levelers are giving the same high performance on cold-rolled steel as they do on galvanized and hot-rolled products. One large producer reports that sheets from 85% of a light-gauge cold-rolled coil are leveled to stretcher-level flatness. Furthermore, this same operator has reduced rerolling by 25%.

Another example: A maker of wall panels eliminates time-consuming inspection and sorting of individual sheets for flatness. By leveling them with a Voss, he automatically assures panel flat sheets without further checking.

User after user tells of increased quality and lowered costs resulting from Voss Roller Levelers. Voss-patented exclusive design features assure extreme flexibility of application and precise area control on any section of a sheet or coil. Whatever your application—galvanized, hot or cold-rolled, strip, coils, sheets or plate, ferrous or non-ferrous—Voss has a quality-making, profit-making story for you. Write today for detailed information and a list of users.

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Look for the beauty of Stainless Steel on your new automobile. Its bright finish will make your car look better, stay in style longer and have a higher trade-in value.

No other metal offers the freedom of design and fabrication, economy of care and the durable beauty that serves and sells like Stainless Steel.

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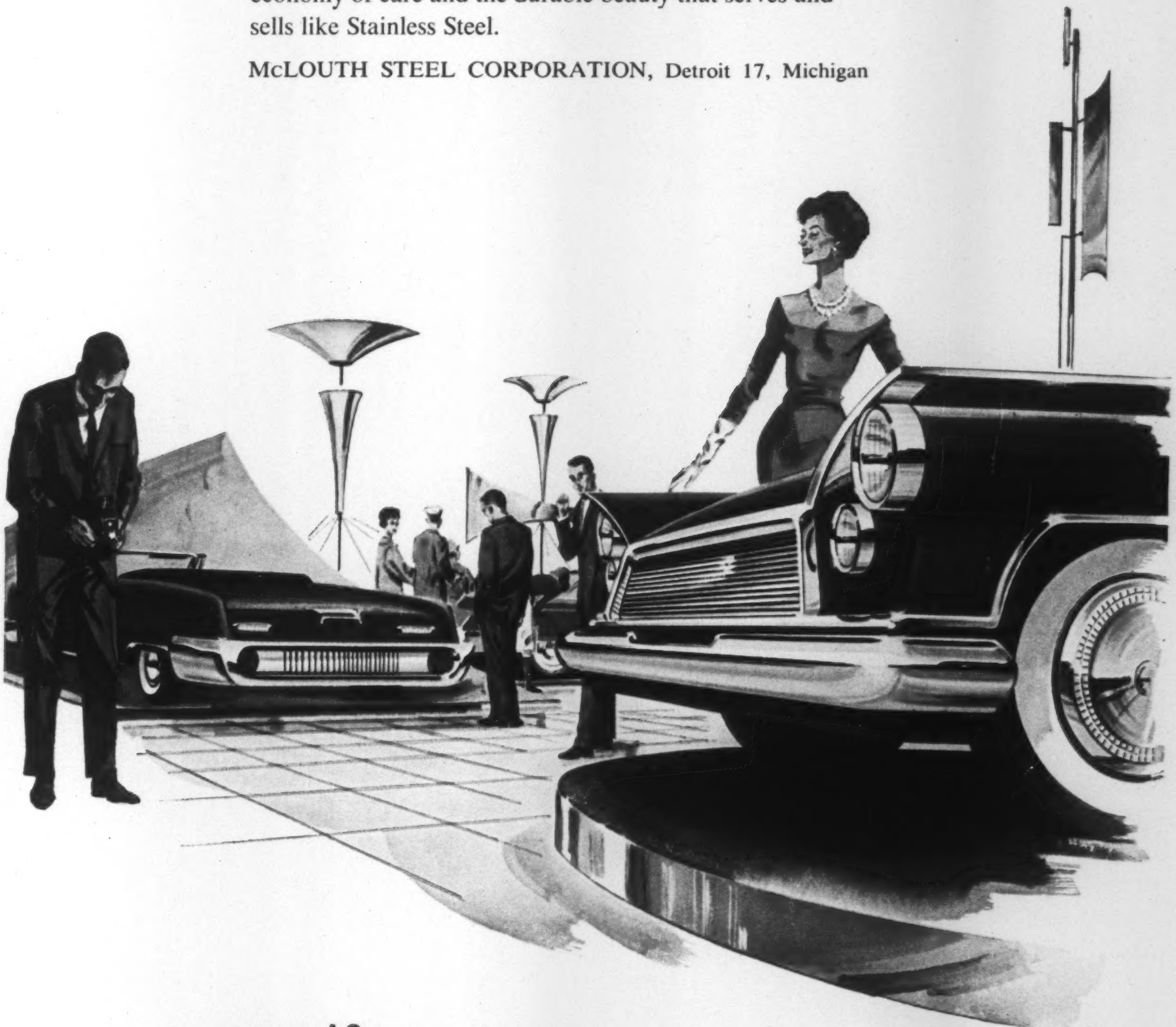

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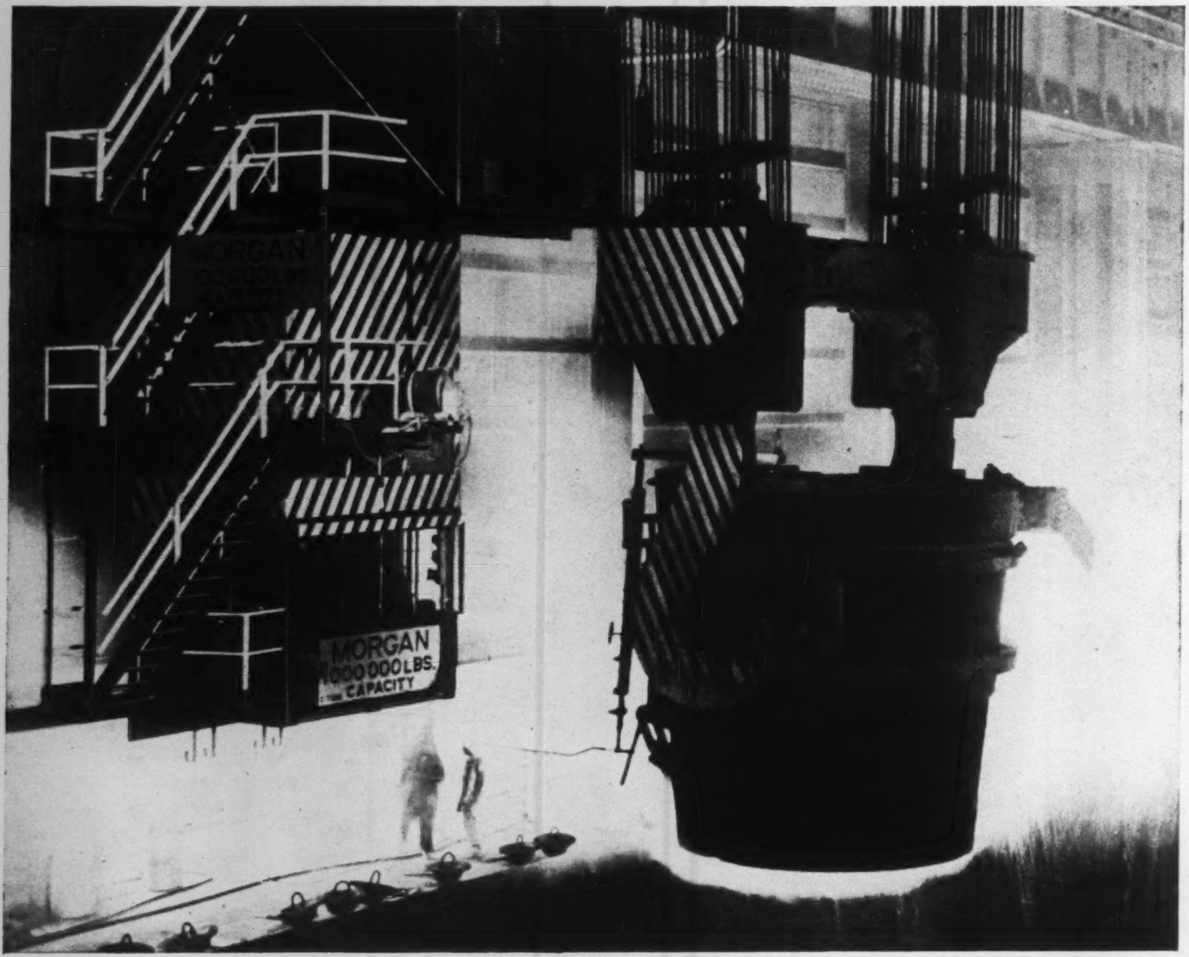
McLOUTH STAINLESS STEEL

HIGH QUALITY SHEET AND STRIP

for automobiles



Repeated million-pound loads in the intense heat from 375 tons of molten steel, cause no spalling or deformation of Rollway Bearings.

1,122,000 Pounds Ride on 68 Rollway Bearings

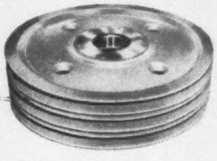
One of the largest in the world, this 500-ton Morgan-built ladle crane is Rollway equipped in many positions.

Sixty-eight maximum-type, solid-cylindrical bearings—mounted without inner races—lift and lower the 1,122,000-pound weight of the lifting beam, ladle hooks, ladle and white-hot steel.

Rollway Tru-Rol® type bearings are used in the two General Electric 360 HP – MD-620 Hoist motors which lift the weight of the ladle and its molten metal content.

The maximum-type bearings in the hoisting sheaves are mounted directly on the shaft without inner races, which greatly simplifies assembly for applications of this size.

Thrust bearings in the 25-ton and 75-ton auxiliary crane hooks are standard Rollway precision types with broad-area contact between rollers and plates to prevent Brinelling and assure freedom of rotation under the heaviest loads.



Sheaves ready for assembly on shaft and installation in lifting beam.

For bearings that accomplish the extraordinary in an ordinary manner, write, wire or 'phone Rollway Bearing Co., Syracuse 1, N.Y.

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engineered production equipment for the Steel Industry

Blaw-Knox offers a complete service for the design, manufacture, and construction of steel rolling, processing, and finishing plants. In addition to these major installations, Blaw-Knox furnishes steel plants with a wide variety of products for use in operations ranging from iron making to cold finishing. The engineering force and plant capacity behind these specialized services and products are unsurpassed in the industry. They will continue to give exceptional service to the steel industry to help meet its constantly increasing production requirements.

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46- x 90-inch Universal Slabbing Mill

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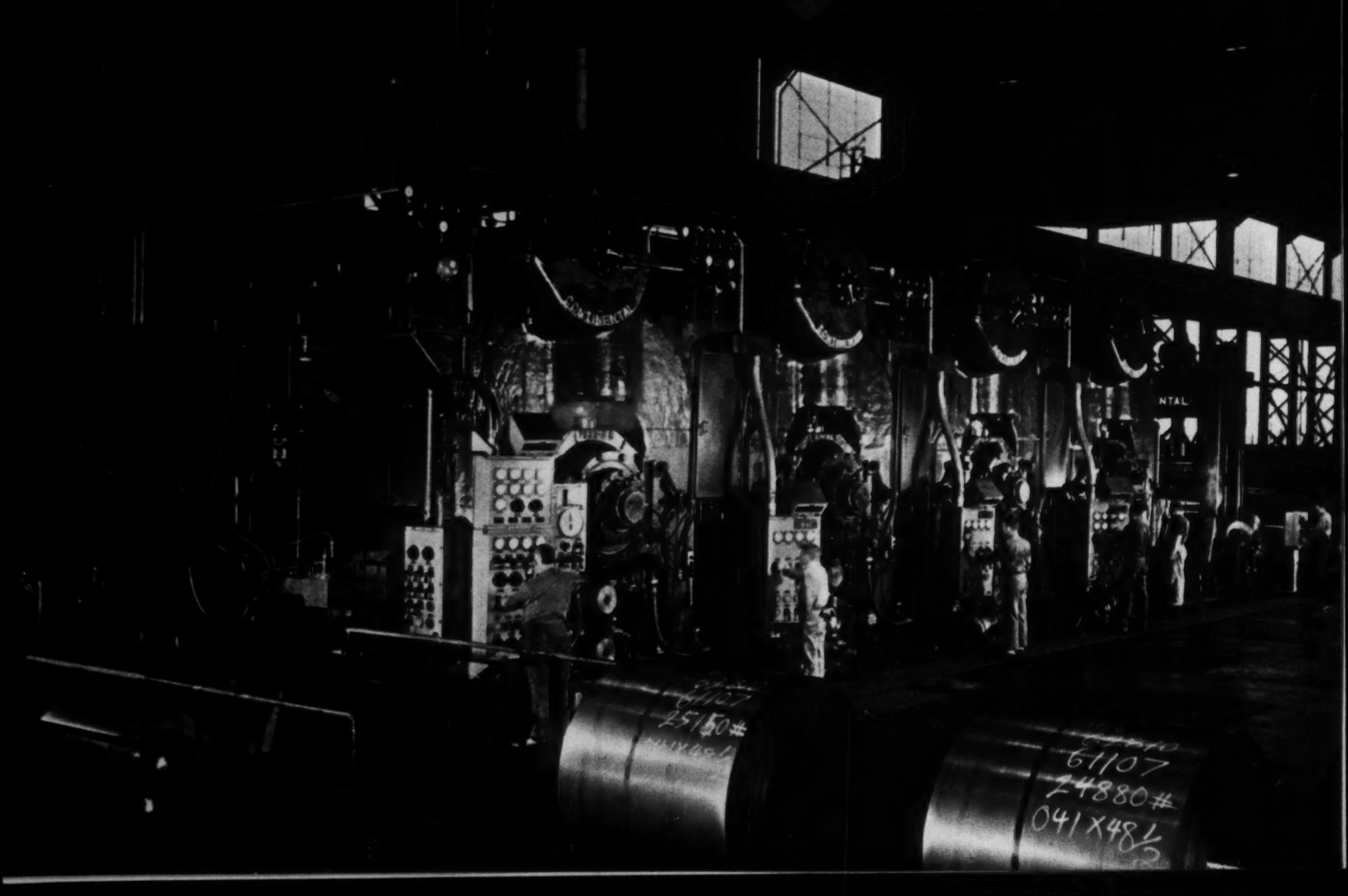
56-inch semi-continuous Hot Strip Mill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NTAL
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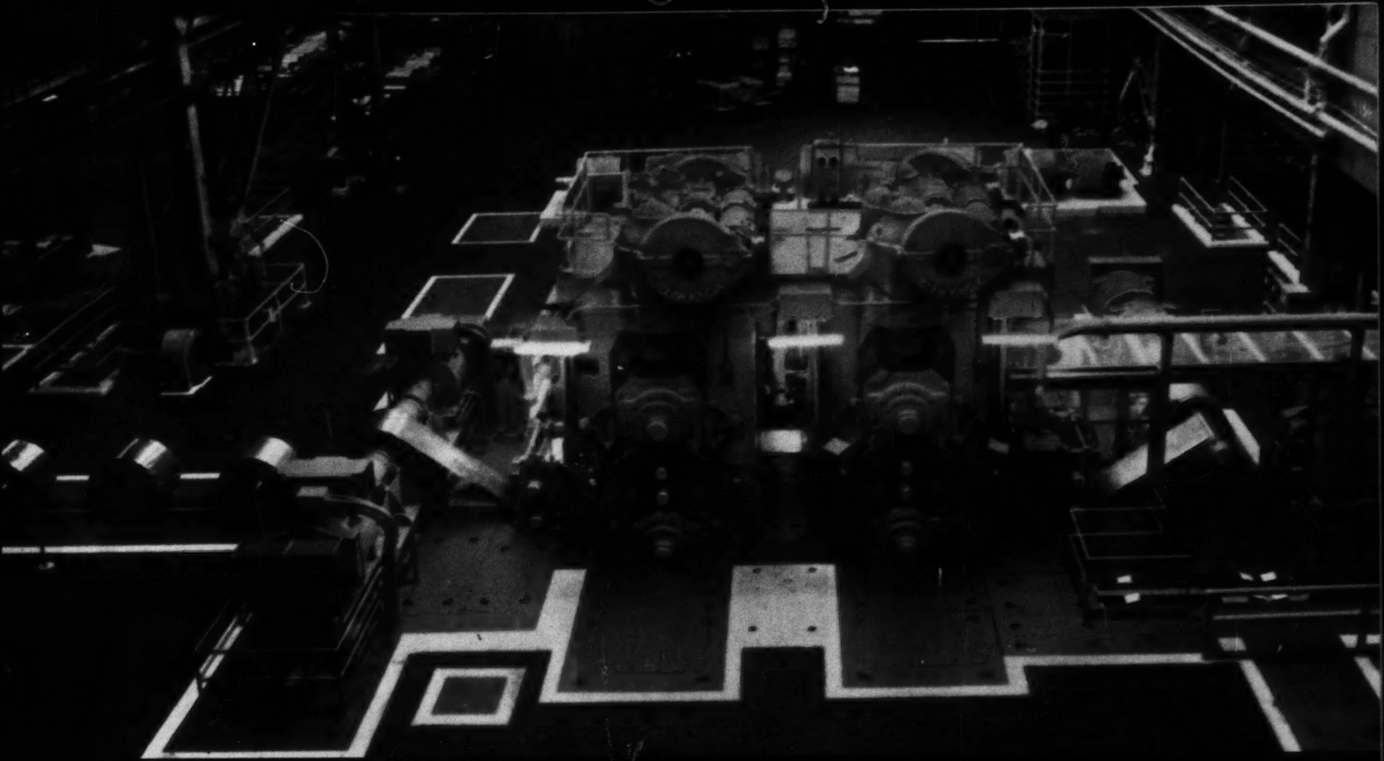
60-inch 4 stand tandem Cold Strip Mill



▲ 19- and 53-inch x 48-inch 2 stand Temper Mill

▼ Aetna-Standard Continuous Annealing Line

BLAW-KNOX

Blaw-Knox Medart Tube Turner uses carbide tools for finishing heavy walled tubing from 9 to 26 inches in diameter.

Blaw-Knox Iron and Steel Foundries furnish Iron, Alloy Iron, and Steel Rolls, Carbon and Alloy Steel Castings, and heat and corrosion-resisting Alloy Castings.

Typical of Blaw-Knox mechanized Steel Plant Accessories is the Autopour® which makes possible safe, automatic teeming of ingots from remote locations on the pouring platform.

BLAW-KNOX

THE RISE TO A RECORD RATE OF INDUSTRIAL PRODUCTION in 1960 will be led by the steel and automotive industries. But they will need support in the second half if the overall rate is to be sustained. Capital spending may be the surprise factor if the first half surge generates enough industrial momentum.

THE STAGE IS ALREADY SET FOR A ROUND of new equipment buying by the steel industry. Emphasis is on new developments, not traditional facilities. Oxygen steelmaking, ore beneficiation, improved rolling facilities are a few of the areas where spending will be heavy.

WIDER USE OF ALUMINUM will be the principal factor in record shipments this year. Automotive use of aluminum is expected to increase 40 pct. Architectural and building use is expected to rise 30 pct.

AUTOMAKERS EXPECT THEIR THIRD BEST YEAR, with production of 6.5 million cars and 1.2 million trucks. Total new car passenger sales this year will run up to 7 million. The difference is about 500,000 imports. But even at that rate, it will represent a drop of 100,000 imports from 1959.

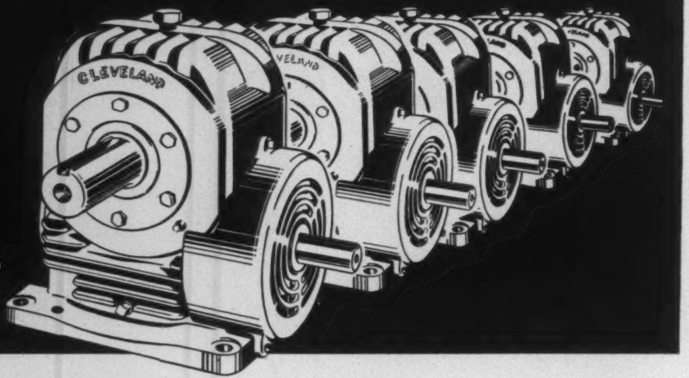
RESEARCH EXPENDITURES FOR THE NATION are running well ahead of predictions. If R & D spending hits $12 billion this year, that figure will be about two years ahead of schedule. U. S. companies are spending about 2c of every sales dollar in laboratories and research centers.

REGIONAL NOTE FROM THE PACIFIC COAST: The 13 western states are expected to use eight million tons of steel this year as the area continues to grow industrially. That's 10 pct more than the previous high set in 1957. The region will also consume 15 pct of the national aluminum output.

AS A MIRROR OF GENERAL EXPECTATIONS of business, the railroaders are counting on significant improvements early this year. The quarterly forecast of revenue freight loading indicates an increase of 5.9 pct in first quarter car loadings over 1959. Biggest regional increases: Great Lakes, 18.4 pct; Allegheny, 11.3 pct, Atlantic States, 9.9 pct.

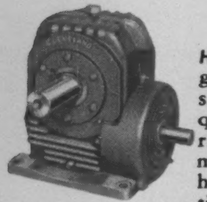
INDUSTRIAL HEATING EQUIPMENT ORDERS in November were up 51 pct over the same month in 1958. Induction heating equipment orders jumped even more, 169 pct, according to the Industrial Heating Equipment Assn., Inc.

Why do these new Clevelands carry higher horsepower ratings?



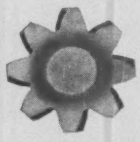
It's because Cleveland design engineers — drawing on 47 years of experience — have successfully blended the *just right* combination of housing design, exclusive heat-treatment for alloy steel worms, centrifugal casting of bronze gear rims together with larger, more rugged taper roller bearings on worm and gear shafts.

This permits substantially higher horsepower ratings with smaller worm and gear units — units that more than meet AGMA's new Standard 440.03. Cleveland now offers speed reducers — from one to forty horsepower — at savings of 50% or more on cost per horsepower.



HOUSING is a rugged one-piece design of highest quality cast iron, ribbed for maximum strength and heat dissipation. Cooling fan of unique design is mounted on *input* end of worm shaft and is equally efficient in either direction of rotation. Only one gear shaft bearing plate is large enough to permit assembly of the gear. On gear shaft extension side, gear shaft bearing is mounted in the housing bore and backed up by a clamping plate. This gives a stronger housing and provides maximum strength for overhung loads. Housings are designed for mounting in one position only, thus avoiding design compromises necessary with *universal mount* types.

BEARINGS on both worm and gear shafts are Timken taper roller-type, providing adequate thrust and radial capacity. Worm bearings are mounted directly in housing bore for greater rigidity.



WORMS are cut integral with shaft and accurately ground to a high surface finish on both thread flanks. Shaft extension diameter is especially large to permit increased overhung load capacity. An exclusive heat-treating technique provides a high degree of hardness throughout the entire thread thickness and well below the worm's root diameter. It gives maximum thread strength and resistance to wear without losing the advantage of a tough core of medium hardness.

GEARS have centrifugally cast bronze rims with a high tin-nickel content. They provide greater density and a higher hardness, giving increased resistance to wear and fatigue pitting. Bronze rims are centrifugally cast integral with cast iron centers, in smaller sizes up to 6 inches, which permits strong mechanical keying of the two parts — without dependence on actual surface bond. Gear shaft extension diameters are especially large to permit greatly increased overhung load capacity.

ORIGINAL MASTER WORMS for each size and ratio of worm gearing, are made individually in Cleveland's tool room to extremely close tolerances and kept in perpetual stock. Cleveland makes all their hobs. No outside source has been found that can produce worm gear hobs to their exacting tolerances and standards. Each hob is checked against this master worm — as are production worms and gears. Thus, it's not necessary to ever replace Cleveland worms and gears in sets. A new gear will operate perfectly with an old worm and vice versa.

Call your Cleveland Representative today, to get all the facts on these new, more powerful speed reducers. Or, write for a copy of new, free Bulletin No. 405 giving complete engineering information.

The Cleveland Worm & Gear Company,
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Only a Few "Ifs" as Business Heads for New Records

Steel and automotive industries lead the way as a first half boom gets under way.

But they will need support if a record rate of production is to be sustained.

Factors not apparent now may determine whether the boom lasts.—By R. D. Raddant.

▪ What are the forces expected to push U. S. industry to new record production in 1960?

And, probably more important, will business hold at, or close to, the record high level? Or will it come tumbling down in a 1957-style decline after the upturn levels off near the middle of the year.

Answers at this point, of course, are based on the dual assumption that there will be no crippling labor strike, and that no world conflict will bring on international chaos. If either occurs, all bets are off, all predictions are out the window.

Steel Leads the Way—As a result of 1959's 116-day steel strike, the steel industry is left with a deficit of some 20 million tons of steel to make up. With this added on to a good rate of steel consumption, the steel industry will lead the way to the first half boom.

The auto industry, flushed with success of the compact cars and other new models, will be another major force in the economy. Particularly in the first half, automakers will push to the limit.

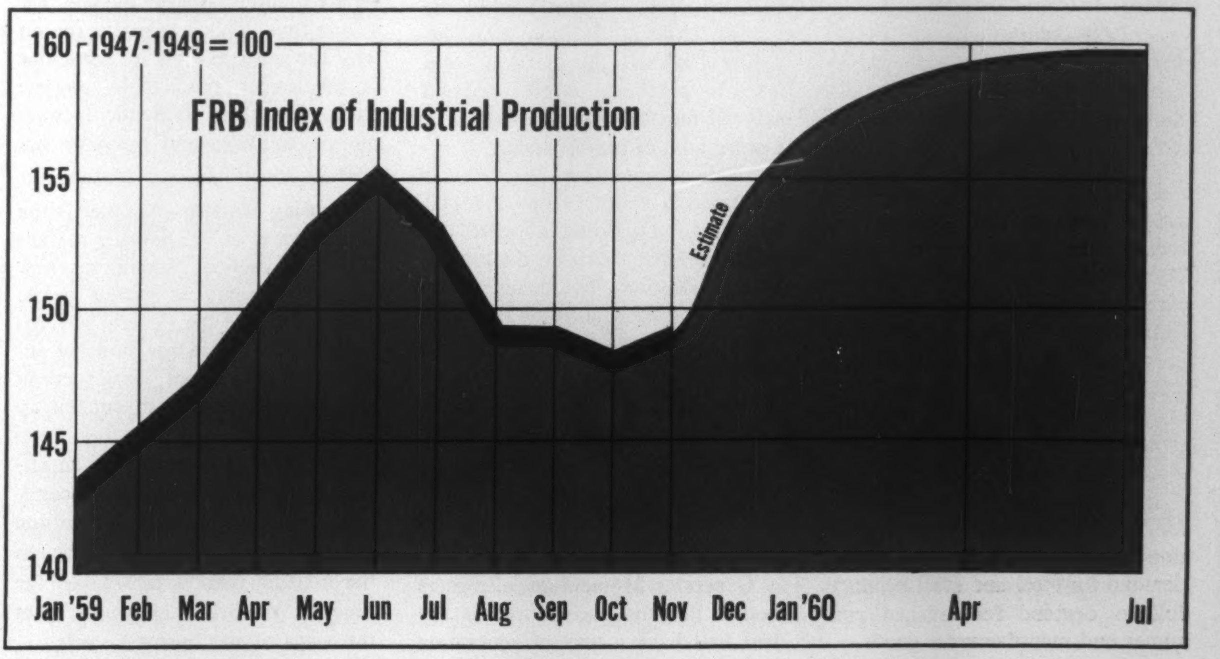
STEEL SETTLEMENT

Exclusive Background P. 170

Market, Price Impact P. 371

Little Other Support—These industries, steel and automotive, will be the principal impetus behind the upswing, already apparent in the early days of the new year. But after these two, the outlook is good, but far from sensational. Other than steel and automotive, no major in-

Production Headed for the Top



How the Experts See 1960 In NICB Forum

Gross National Product

(Billions of Dollars)	4th Qtr '59	2nd Qtr '60	4th Qtr '60
High	487	510	525
Low	475	495	498
Average	481	506	516

Industrial Production Index

(1947-49=100)	4th Qtr '59	2nd Qtr '60	4th Qtr '60
High	152	168	165
Low	144	152	150
Average	148	160	160

Consumer Price Index

(1947-49=100)	4th Qtr '59	2nd Qtr '60	4th Qtr '60
High	126.0	127.0	128.0
Low	124.8	123.7	123.0
Average	125.5	126.0	126.5

*B. F. Smith, U. S. Steel; G. P. Hitchings, Ford; W. E. Hoadley, Jr., Armstrong Cork; L. J. Paradiso, Dept. of Commerce; I. T. Ellis, du Pont; M. P. McNair, Harvard; A. D. H. Kaplan, Rollins; N. M. Koffsky, Dept. of Agriculture; E. B. George, Dun & Bradstreet; O. G. Saxon, Yale; Solomon Fabricant, National Bureau of Economic Research; Jules Backman, NYU; R. L. Reierson, Bankers Trust; R. D. Naess, Naess & Thomas.

dustry is expecting a demand and output of boom proportions.

There is one sleeper — capital goods. The IRON AGE-National Industrial Conference Board surveys of metalworking capital appropriations indicate an upswing in capital spending. This is despite declines in the second half because of the steel strike.

Could Be the Difference—Indications now are that spending has been deferred, but not cancelled. There are other indications that capital spending is beginning to stir. Delays have built up a backlog of appropriations yet to be committed. This could be the difference between a comparatively short upswing and a sustained high level of business.

In a way, the business outlook for 1960 is reversed. Steel production usually is a follower, in that demand for steel and steel products follows demand for finished consumer and manufacturers goods.

Record Probable—But the strike turned this around. Now, steel users have to meet the demands of their own sales, then add the 20 million tons of steel that was lost in the strike. This 20 million tons includes lost steel production, plus steel in pipelines, in-process, and sales of finished products that were lost because of lack of steel.

Steel consumption in 1960 is estimated at about 110 to 115 million tons, a creditable year. But with the 20 million ton deficit, actual production should hit nearly 130 million tons, allowing for evaporation of some of the deficit. This will be a new production record.

Wagging the Dog—But as Bradford F. Smith, U. S. Steel Corp. economist asks: What will happen when the deficit is made up, probably some time in the third quarter, and the tail ceases to wag the dog?

Generates Momentum—Business booms like the one assured in the first half have a way of generating their own momentum. A high rate of disposable income creates its own demands that are not readily apparent at the start of a boom.

This includes appliances, new cars, houses, and expenditures of all kinds.

It also generates a desire for capital goods that is not apparent when an industry is confronted with an excess of capacity. A high rate of production demands greater efficiency. Competition demands lower costs. This means new equipment.

That is why it is entirely unlikely that the economy will go into a backslide when the 20 million tons of steel deficit is restored.

New Developments—There are other developments not generally recognized that have crept into the economy in recent years. They will bear watching as the months of 1960 unfold.

One is the development of automotive and other consumer durables market as a highly volatile market. It is probably the most sensitive element in the economy.

This is because an auto or appliance purchase can be easily deferred (most are accompanied by disposal of a serviceable unit). It means tying up a large part of a family's discretionary income for a long time. This is a major reason why the auto market in particular is no longer predictable on the basis of routine economic factors, but on attitudes and opinions not easy to pin down.

Housing Market—Another is the development of the housing market as contra-cyclical, something new to the economy in recent years. This is because the Federal government tends to aid the housing industry in bad times (easier credit and mortgage aid) and toughen up in good times.

The result: In the face of an impending general boom, few economists predict more than 1.2 million houses started this year. Talk on the housing market now takes the tone of "politically allowable," not the ways of the business cycle.

R&D Outlays Due for Big Boost

They Could Reach About $12 Billion This Year

Industry will provide the big push, but government expenditures will hold at high level.

Emphasis will center on search for new materials to meet future needs of both private industry and defense projects.— By K. W. Bennett.

▪ Research and development outlays may hit $12 billion in 1960, according to Kenneth Anderson, executive vice president of the Scientific Apparatus Makers Assn. Other estimates talk of a 5 to 15 pct gain in dollar outlays for research.

Previous forecasts, made as recently as 1958, didn't expect research dollar volume to hit this level until 1962—at the earliest.

The Big Push—Main source of the big push is industry. U. S. firms have been spending about 2¢ of every sales dollar in their laboratories, in a search for new materials and new processes. A few leaders, notably the chemical, electronic, and airframe industries, have already pushed outlays as high as 6¢ of every sales dollar.

It is now expected that 1960 will see the national average break free and push up through the 2¢ figure to nearly a 3¢ rate by year's end.

Government Support — At the same time, U. S. Government-sponsored research will hold at a $3 billion level. Some sources believe that government expenditures will rise again as the new fiscal year begins in July.

Cutbacks in defense outlays have generally involved production of military hardware that is already past the development stage. Hence, the Dept. of Defense's economy drive will not greatly affect the Federal research picture.

Seek New Materials — Research men expect 1960 to see a concentration of research dollars in new materials: steel, refractory metal alloys, aluminum alloys, and a number of the nonferrous metals, are slated for a strong push from laboratories during 1960.

Government research is still sparking a hot hunt for materials that will hold strength at temperatures of 2-4000°F. But higher strength-for-weight ratios will be a prime target in a great number of materials research projects sponsored by industry.

Wanted: Research Talent—The temporary slack in demand for engineers and other college graduates who might fit into a research lab, apparent in 1958, is already past history. This year has seen a fresh speedup in the hunt for research talent.

In 1960, salary offers to new college graduates will again advance. Industry will be vying for top men in the new college graduate crop. Despite a pickup in college enrollment of students aiming for a scientific career, demand will outstrip the supply in 1960 by a wider margin than during 1959.

More Research Grants — Research grants by trade associations are expected to hit a record during 1960. Societies representing some branch of metalworking have been active in 1959, and are scheduling research boosts for 1960.

SCIENCE SEARCHES: A large portion of research funds will be spent in the search for new materials such as a new "four-way" magnetic steel developed by Westinghouse Corp. and Vacuumschmelze of Germany.

Steel Spending Due to Climb

Technological Advances Force Mills to Modernize

Mills are assured prosperous operations through the first six months of 1960 and longer.

Capital spending should start climbing to take advantage of the latest developments in making steel.—By G. J. McManus.

▪ All signs point to a strong capital push for steel in 1960.

The new year finds mills at that point in the recovery cycle when capital dollars have always started to flow. This time a wave of technical advance is bringing extra pressure for action.

Now the stage is set for actual spending to take off. According to Commerce Dept. estimates, steel spending (seasonally adjusted) will jump nearly 40 pct in the first quarter of 1960.

Plan to Spend—Figures from The IRON AGE capital appropriations survey (Dec. 17, 1959, P. 137) indicate a capital outlay gain of $70 million for the full year 1960. This would put steel spending at about $1.1 billion for the year. And fourth quarter appropriations figures could revise the estimate upward.

Survey findings are backed by reports from producers of steel mill equipment.

"Things look very promising," says G. G. Beard, president of United Engineering and Foundry Co. "They have to look promising if all the forecasts mean anything. And the current volume of inquiries points to a very good year."

Pressures for Progress — Strike losses are the one question mark in the steel picture. Last year's strike reduced the supply of capital dollars. On the other hand, the strike left a backlog of delayed construction. And it assured the mills of prosperous operations at least during the first half of 1960.

Moreover, technical improvements are coming too fast for the mills to sit still long. New avenues of advance keep opening up to push steelmakers deeper into development work and new construction.

Developments have reached the point where they demand capital spending by the mills. In the case of oxygen vessels, for example, equipment men can show how older shops can save enough to pay for the vessels in less than two years time.

Beneficiation Progress—Economics like this have led to projects representing another 7 million tons of basic oxygen steelmaking capacity. And suppliers say two more jobs could break any day.

Ore beneficiation and blast furnace modernization are in much the same class. Using taconite pellets, Armco Steel Co. last May averaged close to 2700 tons a day on a blast furnace at Middletown, O. Koppers Co. is talking about a blast furnace that would operate with 40 lb top pressure and turn out 4000 tons a day. Prefluxed sinter is bringing a sharp reduction in coking rates.

Ore beneficiation progress has moved forward so rapidly it has tended to slow construction. Three new sintering lines are going in but, for the most part, mills are holding back big projects. They fear a better method of agglomeration may be found after commitments have been made for the previous best.

Advances in Steelmaking

Here are the latest developments in:

Blast Furnaces—Higher top pressure, natural gas enrichment, and other improvements are drawing strong interest. New construction lags, but mills are enlarging and modernizing furnaces.

Sintering—Recent results with pellets have brought a review of the whole beneficiation program. New briquetting techniques could be a sleeper. New construction has slowed.

Basic Oxygen Vessels — New projects call for LD vessels twice the size of units now operating. There is active interest in new construction.

Rolling Mills—Trend is toward bigger, faster mills and more precise control. Improved design hot strip mills are the center of new construction plans.

Direct Reduction—Ability to reduce complex and low-grade ores is assuming greater importance. Interest is high for a wide range of applications.

Vacuum Treating — Larger ingots and lower alloys mark progress here. Vacuum degassing is attractive to tonnage producers.

Controls — Computers are coming into the picture for process control and data analysis. Coming up fast are controls that will analyze experience and optimize processes.

Diminishing Returns?—Only two new blast furnace projects are in the works and timing is uncertain for both. However, a vast amount of modernization work is underway. Mills are playing with high top pressure, natural gas enrichment and other innovations.

Basic roofs and oxygen jets are souping up the production of openhearth furnaces. However, a top engineer for one mill points out that a mature process like openhearth steelmaking is closer to the point of diminishing returns than newer methods. It is significant that only one new openhearth job is known to equipment men at this time.

Rolling in High Gear—In rolling mills, the trend is toward bigger, faster equipment with better control. For its Great Lakes division, National Steel Corp. is building a hot strip mill that will roll 30 ft slabs into 75,000 lb coils at speeds up to 3000 feet per minute.

At Indiana Harbor, Ind., Youngstown Sheet & Tube Co. is building a six-stand tandem cold mill that will roll 62,000 lb coils at speeds over 7200 feet a minute. It will be the world's fastest mill, and will be the first six-stand mill of this type ever built.

Equipment producers say the newer mills put pressure for modernization on the whole industry. This is particularly true, they say, of hot strip lines. Republic Steel Corp. and Crucible Steel Co. of America are putting in new hot mills to roll stainless, alloy and other steels. Several other companies are currently revamping hot mills or have recently completed such projects.

Reducing Errors—Suppliers say the big boom has yet to come for rolling mills. Interest was strong in the first half of 1959 when National Steel announced its big program. Then labor negotiations seemed to slow programs. The hope, now, is that U. S. Steel's announcement of a new plate mill for Gary, Ind., may signal a general ice breaking.

LARGEST SINTER PLANT: Dravo Corp. is constructing the world's largest single strand sinter plant at Jones & Laughlin's Aliquippa Works.

New control developments are difficult to assess. Strain gages and new systems of speed control are reducing the margin of error for hot strip mills.

Computers are coming into the picture in a number of ways. One hot strip mill will use a computer system instead of program cards to select schedules for the mill. The computer will eliminate the need to keep track of a great number of cards. It will store and analyze results.

More Sophisticated Controls—An application being considered for a plate mill will go a step further. Here the computer will actually devise schedules as it rolls. A slab will go through one or two feeler passes. The computer will determine properties of the steel from this experience. The machine will then come up with the best rolling schedule.

Control makers feel computers and other devices give better results. However, steelmakers are not entirely sure the improvement is always worth the cost. A complete computer system, with all instruments, costs about $1.5 million for a reversing mill. This sum must be balanced against benefits that are often difficult to measure.

"We're rolling strip within 1 pct of gage," says one expert. "But we're allowed 10 pct variation. In this situation, it's pretty hard to justify further improvements."

Reduction Plans—Despite this, the mills are going ahead with more refined controls. Computers are going on an annealing line, a sintering line, at least one hot strip mill and at least one plate mill.

Among the new processes, direct reduction, vacuum treatment and pressure casting all made important gains last year. All have the potential for explosive growth.

Big Problems Face Congress

▪ An election-year Congress is getting back to work in what could easily be one of the wildest political skirmishes in 25 years.

The lawmakers are facing an election in an era when missiles are replacing rifles, nuclear disarmament displacing treaties, and a new-style informed voter is likely to replace the old ward-heeling standby.

Political Bread—In kneading the political, economic, and philosophical dough that will become a legislative program, out of which foundations will have to be built for next year's elections, the members of Congress will be facing an unusual and explosive political situation.

Congress is not only controlled by Democrats bucking a Republican President, but this same President appears to be gathering his greatest strength as the end of his constitutional term approaches.

STRIKE LAW

There will be serious and determined efforts to push some new anti-strike or labor-management laws through Congress this year. It'll be an outgrowth of the crippling steel strike and its effects on government revenues as well as on the economy as a whole. Kickoff is coming from the Senate Labor Subcommittee, headed by Sen. John Kennedy (D., Mass.), in the current study of the steel strike. Other studies will follow.

Proposals range from mandatory government arbitration in basic industries, to applying the anti-trust laws to huge labor unions. Outlook for action depends on the strike reaction in steel as well as in other industries, such as the railroads.

DEFENSE SPENDING

The shift from traditional war planning to the nuclear-missile short war defense system will become even sharper this year. Funds for new planes will continue to be reduced. Missile spending will take a huge chunk of the $19 billion for military weapons. But it will be spent on fewer and fewer varieties as standardization hits the maturing missile industry.

Military research and development spending will continue to rise past $4 billion, as will civilian space work. Metalworking's share of the defense dollar will decrease as more and more money goes for costly electronic gear.

ANTITRUST

Election-minded liberal congressmen are certain to make a strong bid for tougher antitrust laws. The pending premerger notification bill, backed by the Eisenhower Administration, stands a chance of passing. Some tougher marketing laws governing rebates, discounts, and price-cutting are possible, too.

STOCKPILE

The government's once-dying program may get a hefty shot in the arm this year. The present study of the stockpile theory, to take into account civilian reconstruction needs after an attack as well as military war supplies, will probably wind up this year. This could be the start of a new "finished-item" stockpile program.

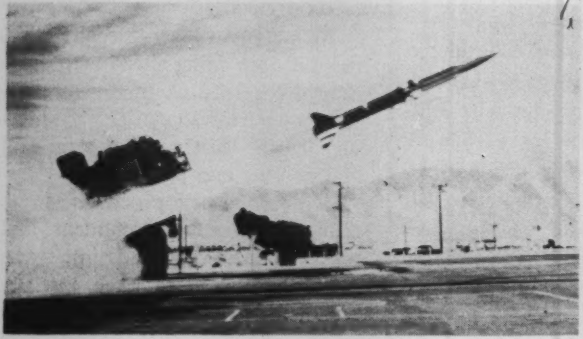
TAX AMORTIZATION

The Korean war-born fast tax amortization program is a thing of the past. The final authority died Dec. 31, after the government permitted fast amortization of some $25 billion toward facilities costing about $40 billion. Officials say they will not ask Congress to restore the program.

COSTS

Congress this year will raise business costs on several fronts. None will be large, but they'll add up to more inflation. An election-year boost in social security benefits, and higher taxes to pay for them, is probable. Mailing costs are likely to go up by 25 to 50 pct. A higher minimum wage (up 25¢ to $1.25 an hour) is a possibility. Several other similar measures are strong candidates for passage.

More for Missiles?



New Labor Legislation?

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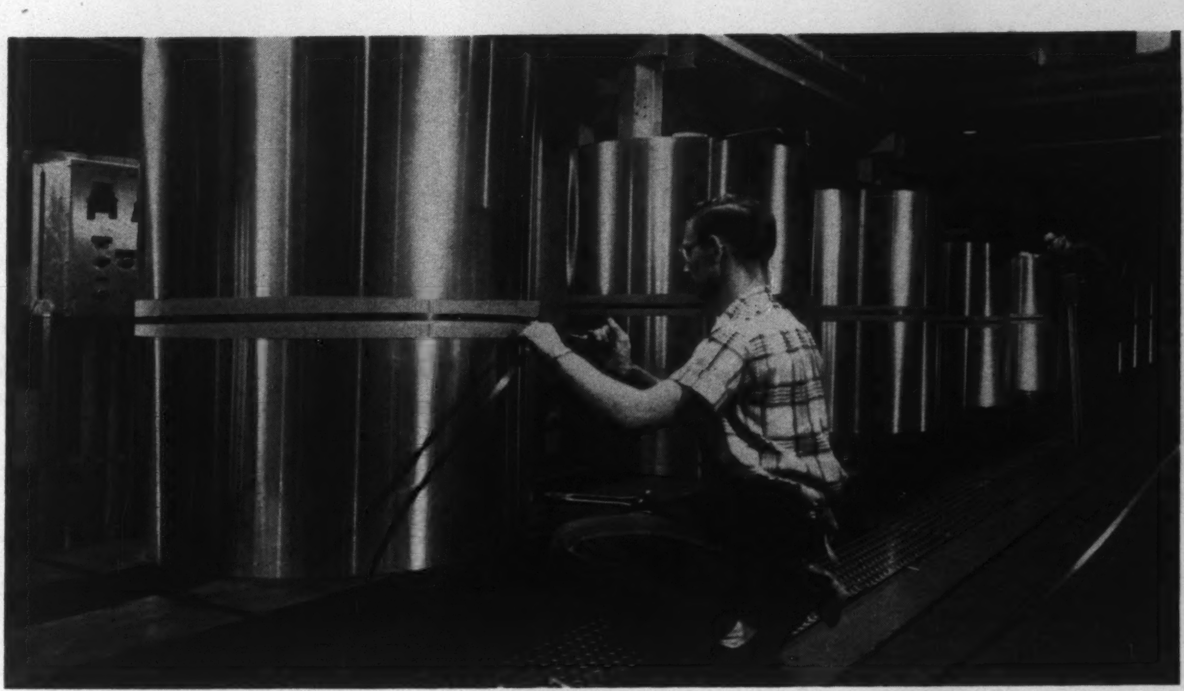
WE DONT WANT The TH Law



MOVING AHEAD: Equipment like this conveyor for coils will help speed record tonnage of aluminum to users.

Aluminum Expects a Record Year

Aluminum makers look for a banner year in '60 with shipments hitting a new high.

Auto industry and builders will continue as the top consumers.—By F. J. Starin.

- The aluminum industry expects a record year in 1960.

Frank L. Magee, president and chief executive officer of Aluminum Co. of America, set the pace with the opening statement in his year-end appraisal: "Shipments of U. S. produced aluminum during 1960 will be the largest in history."

Other Estimates — Donald A. Rhoades, president of Kaiser Aluminum & Chemical Corp., takes a slightly more conservative outlook. He admits 1959 was a year of "sizable increase in volume of shipments and many new products," then predicts that 1960 will be seven to ten pct better.

To round out the Big Three, Richard S. Reynolds Jr., president of Reynolds Metals Co., says, "In 1960, the industry will continue its vigorous growth . . . shipments should increase 10 to 20 pct."

Government View — Even the government, which probably won't be selling any aluminum this year, is optimistic. The Aluminum & Magnesium Div., Business & Defense Services Administration notes: "The 1960 outlook for aluminum is for continuing growth expected to be from two to two-and-one-half times the improvement in general industrial production."

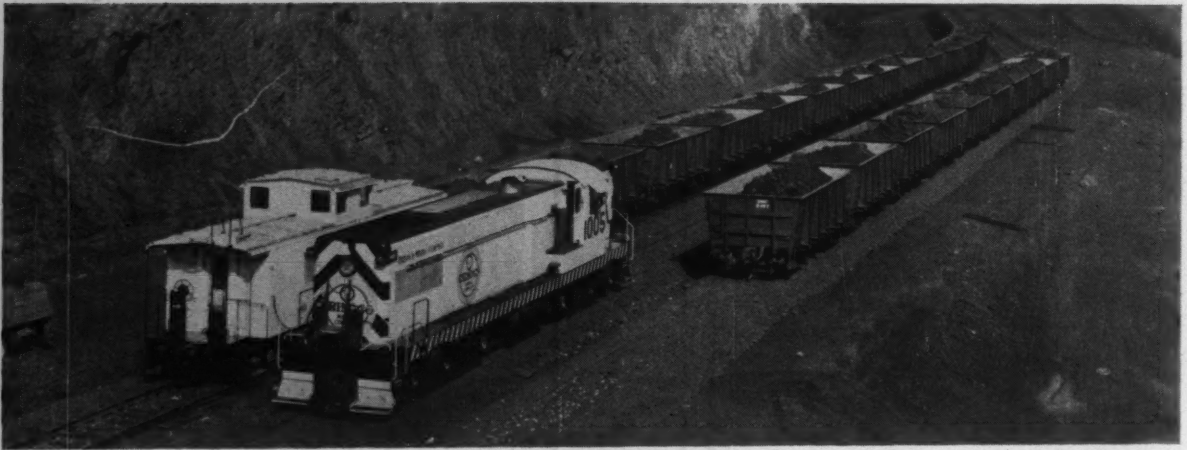
The secondary arm of the industry expects to share in the boom. Carl Burton, secretary of the Aluminum Smelters Research Institute, Chicago, figures smelter ingot output should move up to about 400,000 tons in 1960, from 350,000 tons in 1959.

Price Worries—With production, sales, and shipments all likely to hit new highs in 1960, are there any shady spots?

One is price. Producers recently moved their primary prices up 1.3¢ per lb, which they point out only recovers the price of 1957. The move was carefully made before new labor contracts were signed with United Steelworkers. Trade sources guess this is a sure sign aluminum producers intend to bump prices again.

Actual shipments are not likely to reflect true demand. Consumers have bigger than usual stocks.

But the naturally optimistic aluminum people even see some outs possible here. The government's aluminum experts say, "A reasonable expectation is for a 10 to 15 pct improvement in 1960 shipments to consumers. On the other hand, the development of a few new major uses may stimulate consumption even more."



IN STRONG DEMAND: Venezuelan iron ore from Cerro Bolivar is in heavy demand in world markets.

82 Million Tons of Iron Ore?

Because of the steel strike, American iron ore producers had their worst year since the 1930s last year.

Shortages will show up this winter and ore boats will be out early.—By T. M. Rohan.

- Iron ore shipments were badly crippled by the record steel strike last year, but a big 1960 is expected.

Unusual aspects of last year's season were, of course, the strike, price competition, the growing inroads of foreign ores, and the overall surplus of standard grades.

Outside the U. S., booming European mills are paying a premium for high grade ore to keep blast furnace production high. They are scouring the world for new high grade deposits to exploit.

Dismal '59—The Lake Superior district, backbone of the U. S. industry, had its worst year since the late 30s with about 60 pct of its shipping season wiped out by the strike. Boats were still pushing ice in December and will be out at the first crack in the ice in spring.

The season's total output will probably reach about 44.5 million tons, but about an 82 million ton year is in prospect for 1960. An early November freeze quickly chilled the hopes of many shippers of making up a lot of lost tonnage after the mills resumed work Nov. 7 under government order. Quite a few boats tied up for the year. But December brought a welcome thaw and shippers got a fortunate break.

Winter Woes — However, ore is still short at the blast furnaces. The shortage will get critical in February and March. No furnaces will shut down, but there will be a big checker game with grades and it will serve to limit production.

Meanwhile, Chicago mills hope to move 100,000 tons of taconite pellets from Minnesota by expensive all-rail shipment through the winter. Generally, users bought imported ore to average their costs rather than pay for winter rail shipments.

South American tonnage has moved steadily to the U. S. East Coast. Stockpiles at eastern railroad docks reached record high levels during the strike and year-round shipments continue.

Venezuelan ore is moving as far inland as Pittsburgh where it sells at only a modest premium over Minnesota ores on a delivered iron unit basis. Six Pittsburgh area mills are taking it on regular contract basis besides the parent company, U. S. Steel.

Prices Hold—So Far—Pricewise, ore is being held down by foreign competition, by the general excess of average grades, and by the parent steel industry's holding of the line on prices.

Internationally, Sweden, which traditionally sets the pattern for world prices, has indicated no change for this year. Producers in the U. S. have absorbed several successive wage and rail freight hikes since their last increase of 60 cents for the 1957 season. Last year they announced interim prices which would be reviewed June 30 when the new steel wage settlement was expected.

Imports During Strike—During 1959, Canadian, South American, and European ore (principally Swedish), poured into the U. S., largely uninterrupted by the steel strike. Imports through September hit about 25 million tons which was within hailing distance of the 1957 record of 33.6 million tons. The inroads of imports continue to grow greater through the years.

How New Labor Law Affects You

Landrum-Griffin amendment to the Taft-Hartley labor law requires some new reports from employers.

They close some loop-holes in T-H and provide added protection for employers and employees.

▪ How does an employer comply with the new labor law?

The fog of confusion still extends as high as some members of the National Labor Relations Board staff. But a few navigation lights shone through at the American Management Association seminar on the new labor law.

The new additions to Taft-Hartley are no Magna Charta for the employer. Government legal men caution that, if anything, the Landrum-Griffin additions to Taft-Hartley will make some areas of labor relations more difficult.

Political Bargaining—First: With secret ballots now required every three years at the local Union level, and every five years at the national level, some unions will have a greater problem in internal politics.

They'll have to approach the bargaining table, in election years, carrying a fistful of golden promises made to union voting members. They'll have to produce at least some results in the new contracts. So, the first warning note: "Expect tougher bargaining from many unions in election years."

Skirting the Law—Second: Management will have to adopt a strong attitude in defense of anti-hot cargo clauses and provisions prohibiting secondary boycott. One government lawyer comments bitterly: "We gave business management protection from the secondary boycott under the original Taft-Hartley Law. They promptly bargained away this new protection by allowing hot cargo contracts to be written into new contracts.

"The new Landrum-Griffin additions to Taft-Hartley close loopholes in the original secondary boycott, and make hot cargo contract clauses illegal. Now management had better get up on its hind feet and see that some new contracts don't get around the spirit of the new law."

Limbo Abolished—Management must watch developments in the hot cargo clause of the new law closely. Some Washington sources believe these provisions may also have the effect of outlawing labor contract clauses which forbid subcontract work being placed by a struck plant.

Third: Management men must now take a direct interest in state and local court elections. The new law wipes out the "no-man's land" area of labor legislation, where neither the NLRB or state courts could act. Under the new law, all firms not reached by NLRB fall under state court jurisdiction.

Quickie Elections — Fourth: A law firm specializing in the field of labor law counsels: "Don't be alarmed by the 'quickie' election"—when a union is seeking to represent your workers. NLRB sources feel the "quickie" election is aimed at preventing long term pressure by a minority—who could swing an election if given time enough. Similarly, lawyers think it is to the employer's advantage to file a petition for a quickie election when an unrecognized union is picketing its plant.

Reports Required Under New Labor Law

The Landrum-Griffin amendment to the Taft-Hartley Labor Law requires employers to report certain expenditures in the field of labor relations. But there are still expenditures which you don't have to report.

You MUST Report Payments To:	You DON'T Have to Report:
1. **Investigators** hired to get information on individuals trying to organize your employees, or with whom you are otherwise engaged in a labor dispute.	1. **Annual Employees' Picnic contributions,** or donations to other recreational programs for employees.
2. **Labor Union Officials** or loans to them, just as before under old Taft-Hartley.	2. **Trade Association Dues** or assessments where the trade association collects wages and hours data for an entire industry.
3. **Labor Relations Consultants** or other persons hired to attempt to influence employees in how they will bargain, or whether they will organize.	3. **Lunches Bought for Union Officials.** If you go much beyond meals, however, you are moving onto shaky ground.

Who Won in the Steel Contract?

"Recommended" contract cost the industry many of its issues.

Vice President Nixon was the big force in reaching the settlement.—By Tom Campbell.

▪ The steel industry put up one of its most valiant fights to stop the wage price spiral. But it lost. At least part of the battle.

Heavy governmental pressure, through Vice President Nixon and Secretary of Labor Mitchell, broke the ice for a steel settlement. It is significant that chief company negotiator R. Conrad Cooper called it a "recommended" settlement—the same words used in IRON AGE's special Sunday release.

Left to its own devices, the steel industry would have gone down to the wire. But it was a question of employee election outcome. The high command in steel did not relish seeing a 90 or 95 pct vote piled up against the companies—a figure believed probable.

Nixon Warns—Vice President Nixon privately warned steel officials that the government was ready to crack heads seeking an extension of the injunction and that Congress was in the mood for a compulsory arbitration. He was speaking the truth. So the industry gave in—under protest.

In the current settlement, the union won about everything it wanted except a complete carbon copy of the 1956 package. The fringe benefits were liberal and the wage increases during the second and third year of the contract are about what the union wanted. The immediate 4¢ an hour cost-of-living wage increase helps compensate for the lack of a wage increase during the first 6 months of the 30-month agreement.

Company Position — The steel firms lost about everything except that they settled for about ½ the cost of the 1956 agreement. That one cost 81¢ an hour in the three years. The new one will run between 39¢ and 41¢ an hour for 30 months. At least the companies stopped outlandish wage boosts and if there is a price increase, as expected, it will be a moderate one.

The big crack in the steel picture came more than 2½ weeks ago when Vice President Nixon called Roger M. Blough, United States Steel chairman, and David J. McDonald, Steel Union chief, to his home for heart-to-heart discussions. Many other meetings took place after this major one. This was the second time Mr. Nixon dived into the thick of it. He tried, and failed, to obtain a settlement early last July. Then he missed it by an eyelash.

Final Stand—The 11 steel companies—in the last stages of the break which began two days before New Years day — appointed Mr. Blough, Arthur Homer of Bethlehem Steel, and Tom Patton of Republic Steel, to direct the industry's retreat in the face of government pressure. The 11 company heads agreed to the 40¢ 30-month package. Hard bargaining on the details, as the management and union negotiators filled in the framework, went on almost continuously and secretly from December 31 through January 4.

On 2-B—The famous 2-B hassle was settled on the union terms. The entire question will be studied by a joint committee.

Once again, for the sixth time in 23 years, the steel industry has felt the sting and power of union monopoly—and government pressure. The thing that hurts is that twice the government pressure come from a strong Republican administration. And most painful of all: The steel industry could have had a cheaper settlement last July when Mr. Nixon offered a helping hand to both sides.

IRON AGE Broke the Story

In every big news development, there is usually one news beat that stands out over all others.

In the recent steel negotiations, this honor belongs unequivocally to The IRON AGE — specifically to Editor-in-Chief Tom Campbell.

Hours before any wire service or newspaper reported any inkling of an imminent steel labor settlement, The IRON AGE at 1:30 p.m., Sunday issued a special release predicting the approaching settlement, and many of the details.

Even the conservative New York Times conceded: "The first intimation that the week-old drive by the two top Administration officials (Vice President Nixon and Sec. of Labor Mitchell) might head off a renewal of the costly tie-up came from IRON AGE."

Actually, it was the second significant beat of the negotiations for Tom Campbell. Months ago in the early days of the negotiations, he disclosed the industry's mutual assistance program.

The Editor-in-Chief has personally covered the entire negotiations. He actually started laying the groundwork for the anticipated bitter struggle back in 1956 when the old contract was signed.

The current beat recalls 1946, when The IRON AGE reported settlement of a previous steel labor negotiation several days before it was admitted by the principals.

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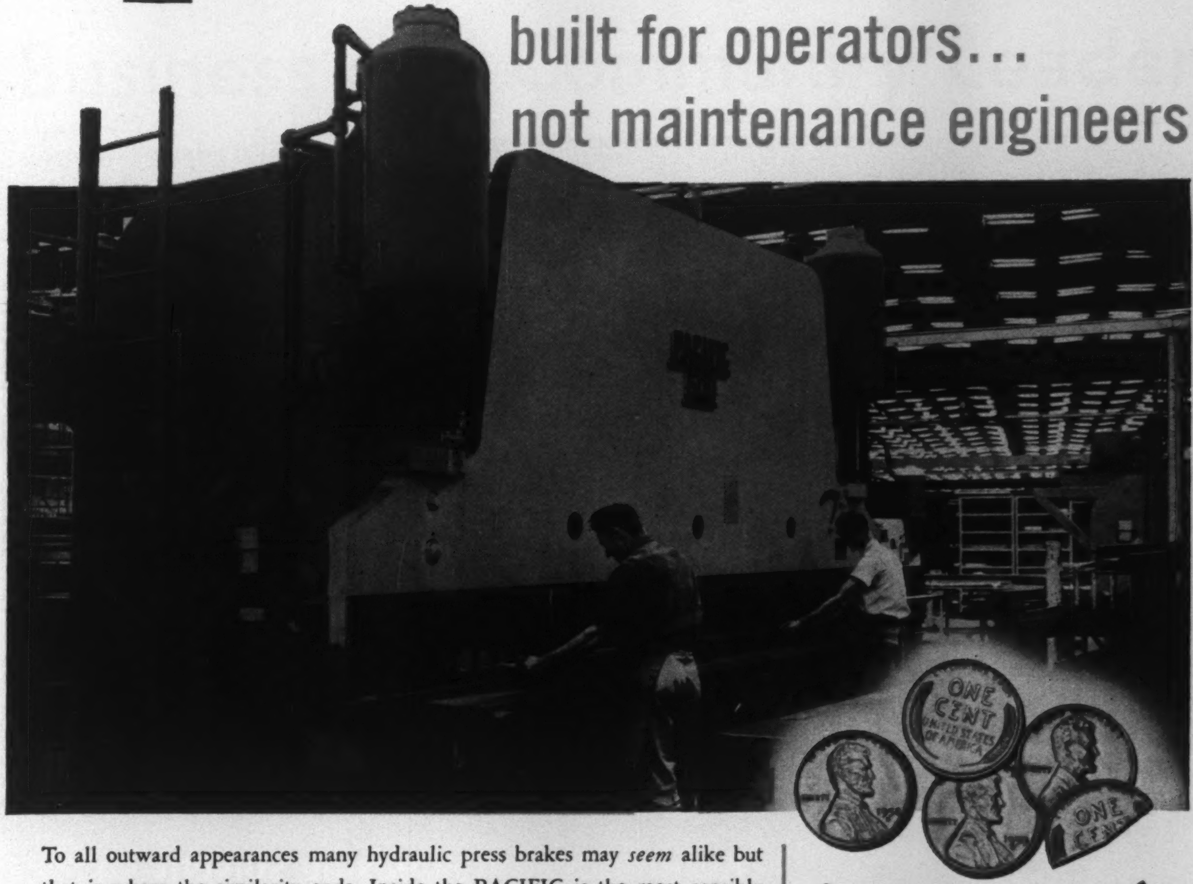

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John D. Williams

Business and Community Leader

John D. Williams is recognized as a leader in business. But he is also active in civic affairs.

He is a firm believer that businessmen should play a part in community projects.

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JOHN D. WILLIAMS: "Working in civic affairs is important."

▪ John D. Williams has two jobs. He is the president of two companies.

In October 1958, after 29 years of service in various executive capacities, he was elected president of Lipe-Rollway Corp. and Rollway Bearing Co., Inc., both in Syracuse, N. Y.

Through the Ranks—An engineer, Mr. Williams rose to his present position through the ranks. Today he is one of the Syracuse area's most highly respected industrial and civic leaders.

He is a firm believer that every industrial leader, full time or otherwise, should be at least a part time community leader.

His Bywords—"Working in civic affairs—whether it be politics, art, education, charity, traffic control or downtown development—is important for two reasons," Mr. Williams says.

"First, it gives a businessman the opportunity to use his special talents and abilities in worthwhile community projects. In other words, he contributes to the community in a way that donations of money never can."

"Second, it gives a businessman the opportunity to sell the business point of view. The businessman in community action is the best possible demonstration of just what business, leadership really stands for and how it serves all of the community. Certainly a businessman should be willing to spend some of his time to tell the management story. After all, others don't hesitate to take the time to tell theirs."

What He Does—And Mr. Williams is certainly a man who follows his own advice.

In addition to running both the parent firm, Lipe-Rollway, makers of heavy duty friction clutches for trucks and earth moving equipment, and the subsidiary, Rollway Bearing, precision roller bearing makers, he is highly active in community affairs.

For example, two years ago the now nationally known Syracuse Plan for Practical Politics was little more than an idea in the minds of a few local industrialists. Mr. Williams, as president of the Manufacturers' Assn. of Syracuse, supplied the leadership, organization and enthusiasm needed to make the plan successful. Today it is recognized as the businessman's blueprint for political action.

Do it Yourself—Mr. Williams believes that participation in civic affairs should be done on a "do it yourself basis." And he does it that way. In addition to being president of the Manufacturers' Assn., he is a trustee of an art museum, and the Syracuse Council of Churches, director of the Syracuse Boys Club, Community Chest, Chamber of Commerce and a long list of other civic agencies.

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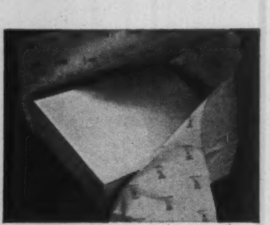

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Tight Money Can Hurt in '60

With borrowing demands heavy in the next twelve months, the credit squeeze should continue through 1960.

Inventory buildup, capital spending, and consumer debt will all be factors. Interest rates will probably rise.

- Don't expect any easing in tight money this year.

There will be too many demands on the money market during 1960 for any lessening in the credit pinch. As a result, interest rates will either hold firm—or rise—in the next twelve months.

Reasons Why—Three major demands for money will help make borrowing expensive this year. These are: The drive to rebuild inventories. Spending for new plants and equipment. And increased consumer credit. They could combine to curb the upswing.

Most of the inventory buildup will come in the first six or nine months. That's one of the reasons why the credit squeeze will be greatest in the first half. Some estimates place the first half stock buildup at an annual rate of $8 billion.

More Business Spending — Also adding to the demand for credit is industry's drive to modernize or expand production. Some of the expansion is aimed at meeting the needs of a growing market. More is spurred by a drive to cut processing and distribution costs and to get competitive for the tougher selling in 1961 and 1962.

Part of this spending will be financed from earnings, tax depreciation allowances, or by freeing assets. But business borrowing will help tighten the money market.

So will rising consumer debt for the purchase of new homes, autos, and appliances. Home buying (already hurt by tighter credit) may be at a slower pace in '60. But in other areas, consumers should keep up the buying pace.

Interest Rate Pressures — All these demands for credit will put pressure on lending rates. Some economists predict the prime interest rate—the amount banks charge leading commercial borrowers—may jump another one-half pct to 5½ pct by mid-1960. Also the disrount rate—the rate the Federal Reserve charges member banks for borrowing—may move to 4½ pct. Increases beyond these points are also possible.

Some Bright Spots—When prospects for 1960 are given, tight money is usually listed as one of the few dampening influences.

But it's questionable how much tight money will slow down the boom. There are even a few influences that could take some of the pressure off. The lower demand for mortgage money is one. Another is that the Federal budget will be in a more balanced position. During the first six months of the year the Treasury should have a seasonal cash surplus of around $5 billion.

More Labor Headaches Coming

- 1960 will be a big year for union-management bargaining. Many important union contracts come up for negotiation in the next twelve months.

There are, of course, notable holdovers from incomplete 1959 negotiations—including the railroad industry. But, in addition, about half of all major collective bargaining agreements expire this year.

Key Sessions Due—The busiest bargaining period will probably be the second quarter. That's when the largest number of contracts are scheduled for negotiation.

Here are some of the major bargaining situations during '60: Aircraft (April-June), communications (May-August), men's clothing (May), electrical products (October), and possibly coal (contract subject to reopening on 60 days' notice).

More Than 120 Pacts — In all, more than 120 contracts covering 5000 or more workers each will expire this year.

Military Hardware Costs Keep Rising

Explaining the sharply-higher costs of today's military hardware is one of the toughest jobs facing military men.

Here are some examples of cost jumps: Polaris submarines cost $100 million, compared with $5 million in World War II. F-106 fighter planes cost $3 million-plus, compared with $80,000 in World War II. B58 bombers cost $15 million each, compared with $250,000 for B17s.

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FALCON: U. S. automakers are counting heavily on their compact cars to make 1960 a good sales year.

Automakers Predict Good Times

If things work out as they predict, 1960 will be the third biggest car making year ever.

Here, also, are some trends to keep an eye on this year.—By A. E. Fleming.

▪ Optimism is gushing through the automotive industry as 1960 gets underway. It is rampant in assembly plants and dealer showrooms.

People paid to know such things predict U. S. factories will produce at least 6.5 million cars and 1.2 million trucks in the next 12 months. This compares to 5.5 million cars and 1.1 million trucks in 1959. If predictions come true, 1960 will be the third best carmaking year in history behind 1955 (7.9 million) and 1950 (6.6 million).

Near the Top—The same people say new car sales will reach at least 7 million in 1960, including 500,000 imported models. This would challenge the record 7.1 million sales set in 1955.

Here are some other trends to watch in 1960:

Economy will continue to be a key word. Six cylinder engines will be installed in more new cars, and V-8s will decline. Sixes jumped to 28 pct of production in 1959 from 23 pct in 1958.

With the possible exception of power steering and power brakes, the trend will be away from power gadgets such as pushbutton windows and seats. Even automatic transmissions seem to have reached a peak, at least temporarily. They fell to 75 pct of car output in 1959 from 77 pct in 1958.

Lighter Trend—More aluminum will be used in 1960, especially in engines. Aluminum V-8s are on their way for some medium-compacts next fall. Some 1961 models will have aluminum bumpers and mufflers.

More widespread acceptance of the alternator (which replaces the generator) by Chrysler Corp models—and perhaps other companies—is in store in the 1961 model year.

A sure bet: Arguments will fly hot and heavy throughout the year over the merits of annual model changes. GM, Ford and Chrysler will continue to say they are necessary. AM and S-P will say they are an expensive nuisance.

Why Things Look Good—There are several reasons for the bright sales outlook. Economists look to a rising gross national product and increased personal and corporate incomes. They say funds for financing consumer purchases of new cars should be ample. A peaceful labor climate within the auto industry appears assured since current UAW contracts extend to mid-1961. Labor settlements by steel and railroad industries early in the year would contribute greatly toward a big automotive year.

Even if peace is reached in steel this month effects of the 116-day strike in 1959 will continue to influence auto making for the next several months. About 700,000 cars were carved from production schedules in October, November and December because there was not enough steel. General Motors and Chrysler Corp did the most carving.

Build 'Em Fast — In trying to make up the 700,000-unit loss, auto producers are scheduling 2.25 million cars in January, February and March. Several hundred thousand units of this total will be for beefing up anemic new car inventories. As 1960 began, only 500,000 new cars were in the nation's dealerships. This is 100,000 to 200,000 fewer than the inventory on Jan. 1 of recent years.

In grinding out a record 2.25 million cars in the first quarter, assembly lines will be helping to build up an inventory that is expected to reach one million by midsummer, the major selling season.

Who Must Build—GM must do the most inventory building. Right now its inventory is about one-third normal. Its production schedules should be enormous in the next few months. As an indication, Chevrolet was turning out cars at an all-time record weekly high just before the Christmas holiday.

Another contributing factor toward a great automotive recovery in 1960 is that four million cars are headed for the scrap heap during the year.

Replacement Market — As cars are junked, they must be replaced. Waiting to help fill the void are the compact cars. "Compact" is a word the public will tire of this year. But compact, or economy, these cars were the big story of 1959 and they will continue to gain the most publicity in 1960.

The extraordinary acceptance of the Corvair, Falcon and Valiant by the public is surprising even the companies who make them.

A year ago, chief officers of the three largest auto companies were saying, "We don't think the public will pay the same price for a small car as they are paying for today's standard size car." The argument was reasonable.

Price Picture—The new, small cars are cheaper and easier to build than regular models. Yet they are commanding prices virtually equal to stripped down models of the Chevrolet, Ford and Plymouth.

In a few months, compact versions of medium price makes will be appearing—scaled down Mercurys, Buicks, Oldsmobiles, Pontiacs and Dodges. The medium-compacts will be slightly larger than the small-compacts. By the end of the year, perhaps one out of every three cars produced will be a compact.

U. S. carmakers seem to be denting the foreign share of the U. S. market. Foreign models were taking one to two pct less of U. S. new car sales than they had in the earlier stages of 1959.

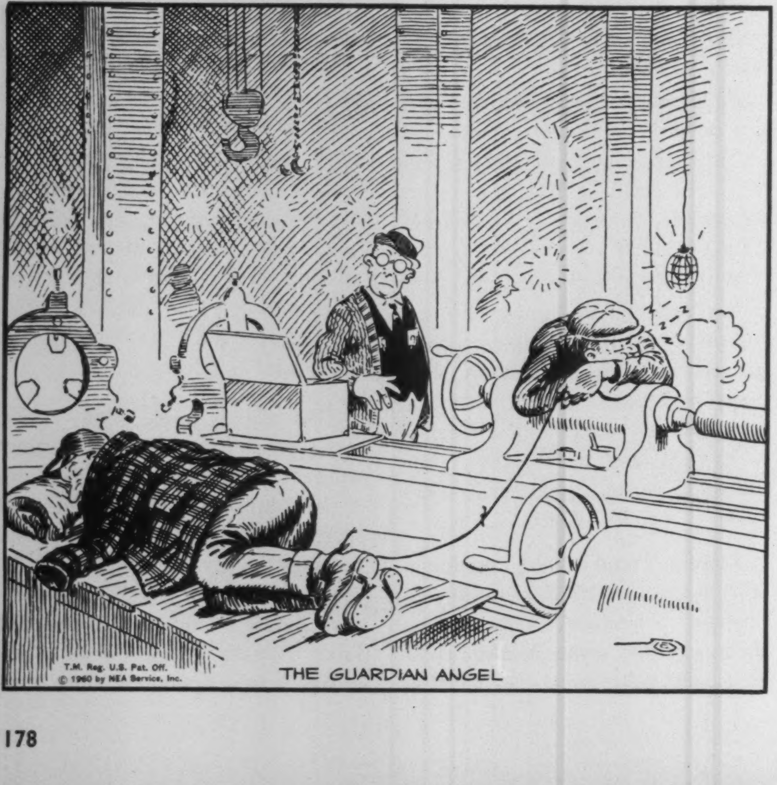
Still in Demand—Still it appears low-priced imports, such as Volkswagen and Renault, are selling as strongly as ever. Some foreign models will begin to offer automatic transmissions this year. This could be a stimulus to these models.

Long Shot: If foreign models continue to bite deeper into the U. S. market despite the Corvairs, Falcons and Valiants, GM, Ford and Chrysler could counter with Volkswagen-size models of their own.

The new compacts should create a heftier export market for U. S. auto makers. In 1959, exports slipped 15 pct below 1958. But U. S. producers are already increasing exports of parts to their overseas plants for assembly.

Big Demand — Station wagons will take a bigger share of auto production in the coming year. They moved from 15 pct of output in 1958 to 17 pct in 1959, and could move close to 20 pct this year.

The Bull of the Woods



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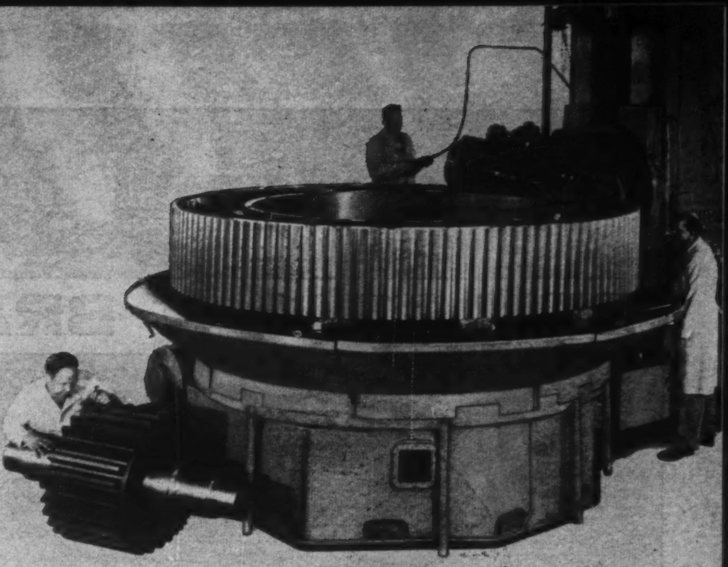
One can well imagine the enormity of engineering work required to design and build this giant earth mover and the responsibility of the components which include numerous ILLINOIS GEARS, in assuring its successful operation.

If you want gears that are made right, *with quality as the first consideration,* specify and buy ILLINOIS GEARS. Ask for full information today.



Machining the large spur gear for driving the digging wheel of the huge Kolbe Excavator.

It takes 3500 cubic yards of earth an hour to satisfy the powerful appetite of this Kolbe Wheel Excavator which is clearing the overburden from a coal strip near Canton, Illinois.

Look for this mark ILL® *. . . the symbol on finer gears*

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Gears for Every Purpose ... one gear or 10,000 or more

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BRIDGEPORT BRASS STRIP...

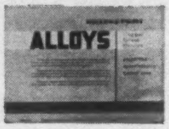
Peterson Manufacturing Company, Kansas City, produces the auto accessories shown here.

STOPS Rising Production Costs of Vital Automotive Accessories

Spotlights, stop lights, reflectors and a host of vital auto accessories are most economically produced from Bridgeport Cartridge Brass Strip (Alloy 69). The ease with which Alloy 69 can be formed is the key to the cost savings. In fact, Cartridge Brass has replaced stainless steel in many of these applications.

Superior deep-drawing properties in Cartridge Brass make it possible to reduce the number of forming operations to a minimum. Rejects are also eliminated, for Alloy 69 has the ductility and strength to take progressive forming operations without rupture or cracking. And the finish remains fine during processing—fine for the chrome plating needed to give auto lamps reflective brilliance. The added plus of high scrap value for brass gives manufacturers a final dollars-and-cents reason to lower manufacturing costs by forming parts from a forming material—Cartridge Brass Strip.

Lamps are not the only products that save from the formability of Cartridge Brass Strip. Grillwork and grommets, snap fasteners and spun products, eyelet machine items and every progressively formed product can enjoy minimum unit costs with this one-of-a-hundred Bridgeport Metals. For a complete list, and mechanical-physical properties comparison, write today for a copy of the folder, "Bridgeport Alloys, Copper, Brass, Bronze." Please address Dept. 3401.



BRIDGEPORT BRASS COMPANY

Bridgeport 2, Conn. • Sales Offices in Principal Cities

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This Is the Giveaway Year

Election-Minded Congress Will be Wooing Voters

Democrats see their first real chance in 8 years to recapture the White House.

Prediction: The race stacks up as Symington versus Nixon.—By G. H. Baker.

▪ This is the year of "something for everybody" from Washington. An election-minded Congress will be handing out benefits.

Farmers, consumers, and foreign governments will gain most. U. S. businessmen will receive the least attention. Tax cuts, for example, won't come in 1960. More realistic depreciation rules on machinery and equipment are postponed.

Eye on Votes—1960 is a rootin', tootin' election year. Stakes are high. Prizes are rich. Voters will decide in November who'll control the executive branch of government for the next four years, as well as which party will call the legislative tunes in Congress.

Democrats are panting at their first big chance in 8 years to recapture control of the White House. They want control over both policy-making and the policy-executing segments of government. There is no lack of candidates.

Democratic Candidate—Best bet to win the nomination: Sen. Stuart Symington. A comparatively pale candidate, Symington lacks the fire and flash of his rivals, Senators Humphrey and Kennedy. But he holds an important trump: Backing of the party regulars. Also, he is the most acceptable to both the big-city leaders, and to the South.

Republicans are running scared—a sign of vigor and health in party ranks. Their chances of retaining control of the executive branch of government are good.

Nixon the Favorite — If Vice President Nixon doesn't stub his political toe in the next six months, something that's very unlikely, he'll win the presidential nomination easily.

Voters tend to retain the "ins" in good times. They seldom vote for the "outs" when payrolls are high and the nation is at peace. Hence, Mr. Nixon tends to be the favorite. Barring an upset, he is the man most likely to move into the White House in January, 1961.

On Capital Hill — Control of Congress is likely to remain with the Democrats. Republicans are faced with an all-but-impossible situation in trying to regain control of the Senate. Democrats are favored in all states where Senate seats are at stake. Democrats now control, 65-35.

The House picture likewise favors the Democrats, although a spirited campaign by Mr. Nixon could topple Democratic rule. Democrats now control the House, 281-153, with three vacancies.

Problems to Watch—Here is a quick run-down on a key government problem of prime interest to business management in 1960—federal spending.

We'll spend more than we'll take in. Total government spending in the fiscal year starting July 1 shapes up at about $80 billion, about $1 billion more than taxes will produce. The Administration's official budget will show an apparent balance. But this fails to take into consideration some rises in spending for missiles and space exploration, which will not show up until well into 1960.

Don't Look for Tax Cuts

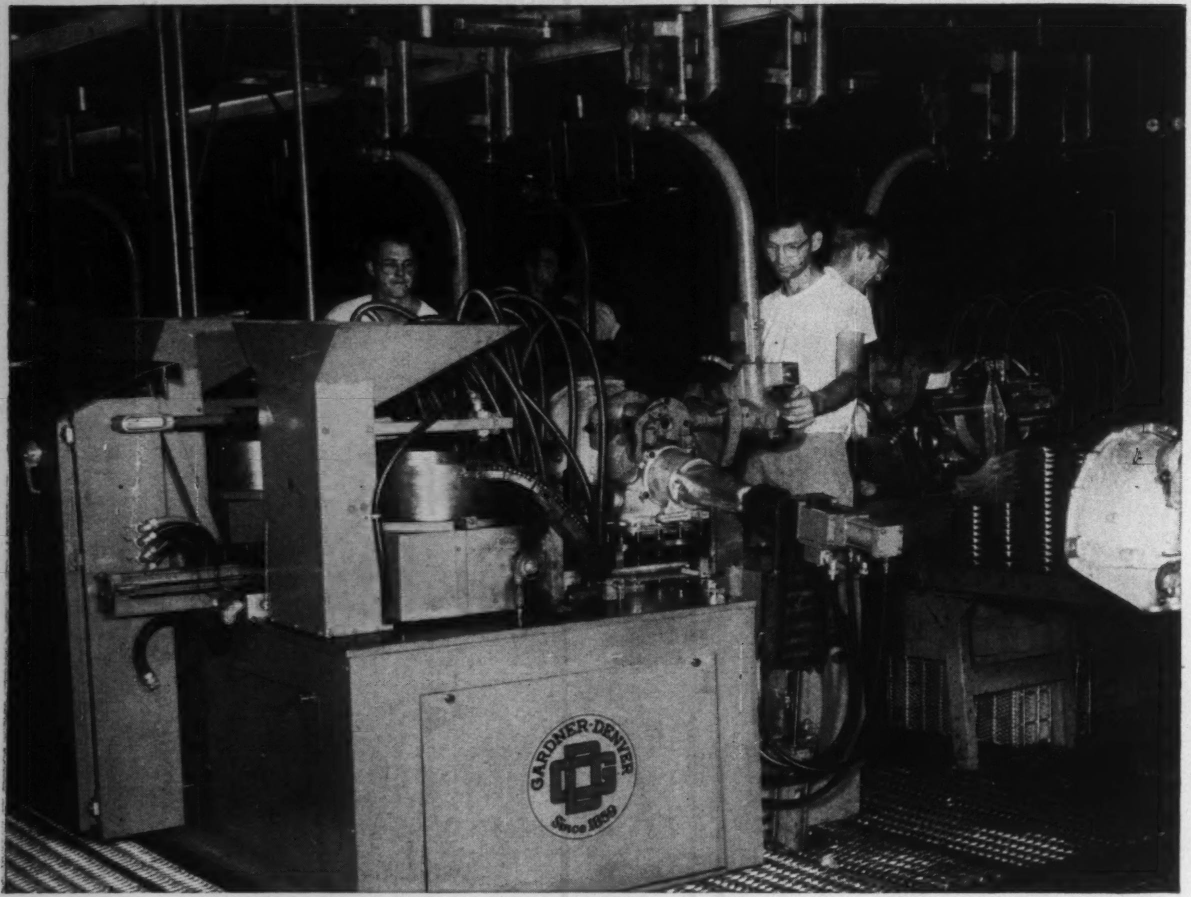
▪ There'll be no tax cuts in 1960. A "tax truce" agreed to by both the White House and Congress bars both political parties from cutting any rates this year.

Time Needed—Chairman Mills, of the tax-writing House Ways and Means Committee, agrees that lower rates are long overdue. But he opposes any tinkering in 1960 because he says Congress needs more time to examine the complex federal tax structure to determine where reductions are needed most.

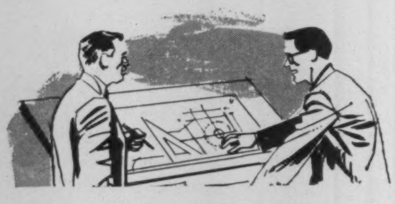
"It is certainly my thought that our tax rates are much too high from the standpoint of incentives and economic growth," Mr. Mills declares.

Base to Be Broadened—The Mills plan is to gain new revenue by broadening the tax base (adding new taxes, possibly a national sales tax), permitting reductions in some established rates, such as those on corporations and on individuals.

Thus, a rewriting of the depreciation allowances for machinery and equipment is now postponed until 1961 at the earliest, along with all other needed revenue revision plans.



Ford speeds transmission production with special air-powered machines



IN INDUSTRY — SPEEDING THE PACE, the Gardner-Denver specialist is an integral part of the team. He works side by side with engineers and designers, helping to solve their problems. At Gardner-Denver there's no substitute for men—our 100-year philosophy of growth.

Three special pneumatic machines—designed by Gardner-Denver specifically for Ford Motor Company—step up production of automatic transmissions. These units automatically and simultaneously feed cap screws, hold and support the transmission, and set the screws on the oil pan assembly in a fraction of manual time.

This example is typical of the many tough problems that Gardner-Denver solves for production men. If you need a special multiple-spindle machine to speed assembly, Gardner-Denver specialists will work with your tool engineers to design and build one that exactly fits the job. Contact your Gardner-Denver representative for details.

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Farwest Will Use More Steel

Record Tonnage Will Be Consumed in '60

Western states should use a record 8 million tons of steel this year. Construction industry will be top user.

The area will also consume about 15 pct of the nation's aluminum.—By R. R. Kay.

▪ The shift across America to the Farwest keeps up at rocket speed. Explosive population growth simply means that the region will make more and more goods for its own use.

For 1960, you can expect these developments:

Watch for the biggest steel-using year in Farwest history. The 13 western states will chew up 8 million tons. That's 10 pct more than the record in 1957. Of course, this prediction is based on labor peace in the steel industry.

More Home Tonnage—Increased steel capacity of the past few years will relieve some of the shortages the Farwest market has suffered.

The first six months will see a big scramble to replenish inventories. Demand for flat-rolled products, galvanized sheet, and tinplate will soar.

Construction consumes 50 pct of the steel in the Farwest. Some needed steels may remain tight during this whole year. And a few projects may have to be postponed. All indications point to the construction industry working at peak levels in 1960.

Gains for Aluminum — The 13 western states will gobble up 15 pct of the national aluminum market this year. That's the best educated estimate.

Primary aluminum production in the Pacific Northwest may hit 575,000 tons—10 pct over last year. In 1958, only 440,000 tons were turned out.

The region makes 30 pct of the nation's output. But the new aluminum plants are going up east of the Rockies.

Aircraft Outlook—Pentagon decisions keep changing the fortunes of West Coast aircraft companies.

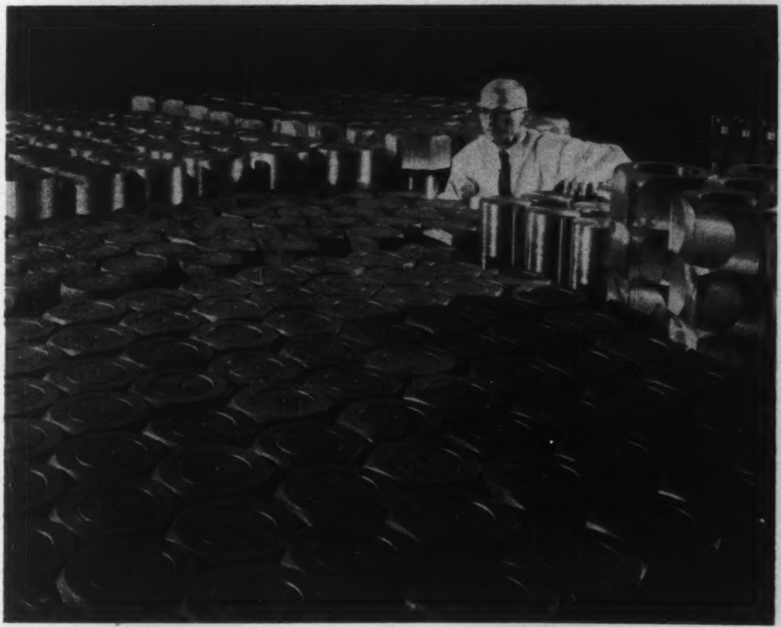
But no matter how the chips fall, the major aircraft-missilemakers are sitting pretty with a $6.8 billion backlog. Here's an up-to-the-minute rundown: military aircraft, $2.30 billion; missiles, $2.24 billion; and commercial aircraft, $2.26 billion.

The industry's impact on the Farwest's economy is tremendous. Example: It pays out $47 million every week to 360,000 workers.

However, during 1960 employment will take a sharp drop. Why? Missilemaking needs less production workers than planemaking.

Most missiles produced in 1960 will be custom-made jobs. And the largest number of them will still be research vehicles.

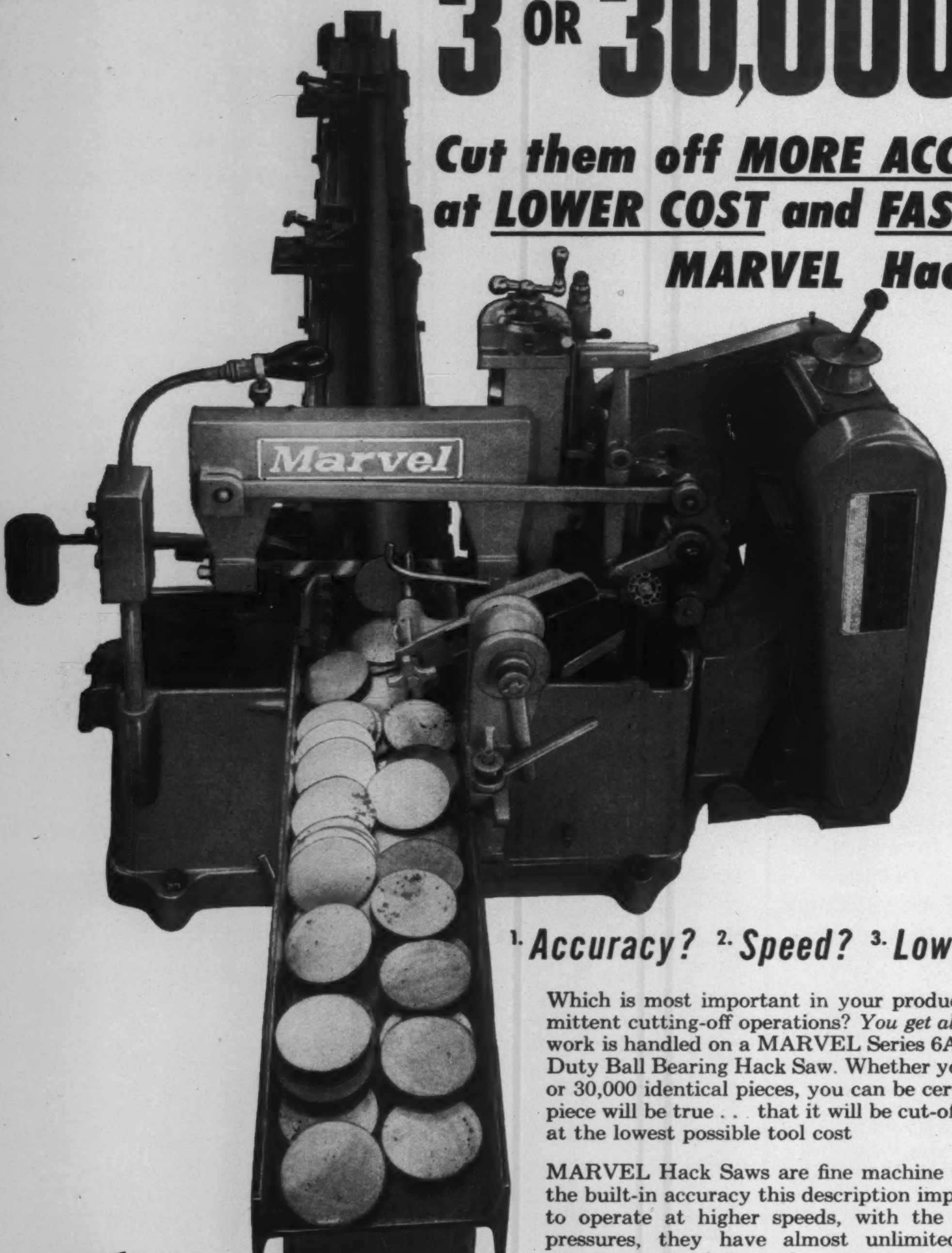
Headed for the West to Power Growth



TURBINE COUPLINGS: Part of the 476 precision fitted, steel nuts and bolts which will go into seven turbines at Wenatchee, Wash. power project. Units are being fabricated by Allis Chalmers Mfg. Co.

3 OR 30,000 PIECES

Cut them off MORE ACCURATELY at LOWER COST and FASTER on a MARVEL Hack Saw



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Which is most important in your production or intermittent cutting-off operations? *You get all 3* when your work is handled on a MARVEL Series 6A or 9A Heavy Duty Ball Bearing Hack Saw. Whether you're cutting 3 or 30,000 identical pieces, you can be certain that each piece will be true . . that it will be cut-off quickly, and at the lowest possible tool cost

MARVEL Hack Saws are fine machine tools, with all the built-in accuracy this description implies. Designed to operate at higher speeds, with the heaviest feed pressures, they have almost unlimited power and stamina to stand up to the most severe service.

MARVEL Hack Saws are truly multi-purpose cutting-off machines. *No* run is too short or too long, *no* material too mild or too tough to be accurately and efficiently cut-off on a MARVEL Hack Saw.

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Decisive Year for Machine Tools

U.S. Toolbuilders Face Challenges in '60

American toolmakers are confident the new year will be a good one.

The industry is pushing research and development, stressing service to beat imports.—By R. H. Eshelman.

▪ What does the new year hold for the machine tool industry? Bigger challenges? Greater competition? Wider opportunities? Will the field share in the general prosperity from industry's stepped-up modernization and expansion plans?

Although better in some respects than the machine tool depression year of '58, last year saw estimated shipments of cutting machines about equal to the $400 million of '58.

Well Above '58—In the eleven months ending Nov. 30, 1959, net new orders, however, totaled $464.1 million. For the calendar year 1958 the comparable figure was a mere $281 million. But in '56 the total ran to $924 million. So current operations are scarcely more than 50 pct.

Forming Tools Advance — On the other hand, one bright spot has been the pickup of orders for presses and other metalforming equipment, especially in the last quarter. Net new orders through November of $135.9 million are well above the $100 figure for 1958.

Meanwhile E. W. Bliss Co. which grabbed a large chunk of orders in '59 (a reported $5 million at Fisher Body) sees cause for optimism. Reflecting on this business, Company President Robert Potter notes outstanding advantages of the rolling bolster type press. With the arrangement, an entire line can be shifted from one set of dies to another in a matter of minutes, eliminating many hours of lost production time for changing dies.

How to Battle Imports—Best bet for improving business in the coming year lies in improved machines and service, other industry sources agree. This is also the key to meeting increasingly severe foreign competition, according to National Machine Tool Builders Association.

Meanwhile, other firms also express optimism. Spokesmen for National Machinery Co., Tiffin, Ohio report surprising success against foreign competition. Reasons given: U. S. industry is now placing a high value on prompt service assistance (and a large, available inventory of replacement parts or spares).

More Research Coming—During '60, insiders look for smaller special combination operation machines to do better than conventional transfer and standard lines. Also, there's little doubt that American builders have the edge in numerically controlled machines. But to hold it they'll have to keep moving ahead. That means more emphasis and money poured into research.

More Emphasis on Machining Research

AUTOMATIC READOUT: Instrument panel (left) gives results of experimental honing setup at Micromatic Hone Corp., Detroit. This study is typical of the industry's new emphasis on research and development.

INDUSTRIAL BRIEFS

Minerals in 1958 — The Bureau of Mines' Minerals Yearbook has been published by the Dept. of the Interior. It contains a comprehensive three-volume record of activities and developments in the nation's mineral industries during 1958. Copies can be obtained only from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

New Look at Morgan—The Morgan Engineering Co., Alliance, O., will embark on a $1.8 million expansion and modernization program for 1960. Work will begin immediately on the construction of 72,000 sq ft of covered plant area; 55,200 sq ft of new yard storage area; and, the redesign and remodeling of 19,000 sq ft of existing plant installations.

Copperweld Spreads Out—Copperweld Steel Co. will expand manufacturing facilities at the Ohio Seamless Tube Div. in Shelby, O. During 1960, about $3 million will be expended for new equipment and to revamp present facilities.

For World Market — Brakeshoe International, S. A., Swiss subsidiary of American Brake Shoe Co., has acquired industrial hydraulics firms in Belgium and England. The Belgian acquisition is Hydrobel, S. A.; the English firm is Deri (Engineers) Ltd. They will manufacture American Brake Shoe's line of Denison hydraulic pumps, motors, presses and controls in Europe.

Reynolds in Tubes — Reynolds Metals Co. has completed its drawn tubing facilities in a new addition to its Bellwood extrusion plant near Richmond, Va. The facility, costing in excess of $500,000, now makes it possible to serve the entire Eastern U. S. with fast deliveries of high-quality drawn and mechanical finished tubing.

Land of the Incas — The first four-slide wire forming machine to be in operation in Peru has been delivered to Invasa, S. A. of Lima by The Baird Machine Co., Stratford, Conn. The machine is a Baird #2 four-slide. It is designed for the high production of articles made of commercial wire or ribbon metal.

Miniature Move—A new Western technical center and sales office was opened recently by Miniature Precision Bearings, Inc., world's largest manufacturer of miniature ball bearings. It is at 8621 S. Bellanca Ave., Los Angeles.

For British Sheets — Davy & United Engineering has a $12 million order for the building of a 68-in. wide hot-strip mill at Richard Thomas & Baldwins' new steel mill near Newport, Monmouthshire, England. Davy United will be collaborating in the project with its U. S. associate, United Engineering & Foundry, Pittsburgh.

Pennsalt at Valley Forge—Pennsalt Chemicals Corp. has purchased a 50-acre site in the King of Prussia park for construction of a technical center. This park is located at the Valley Forge Interchange of the Pennsylvania Turnpike. The center will represent an investment of $6 million.

Bob Weber
The IRON AGE

"You don't need a raise. You're too absent-minded to drive a car, too intelligent to want television, and too preoccupied to hear your wife complain."

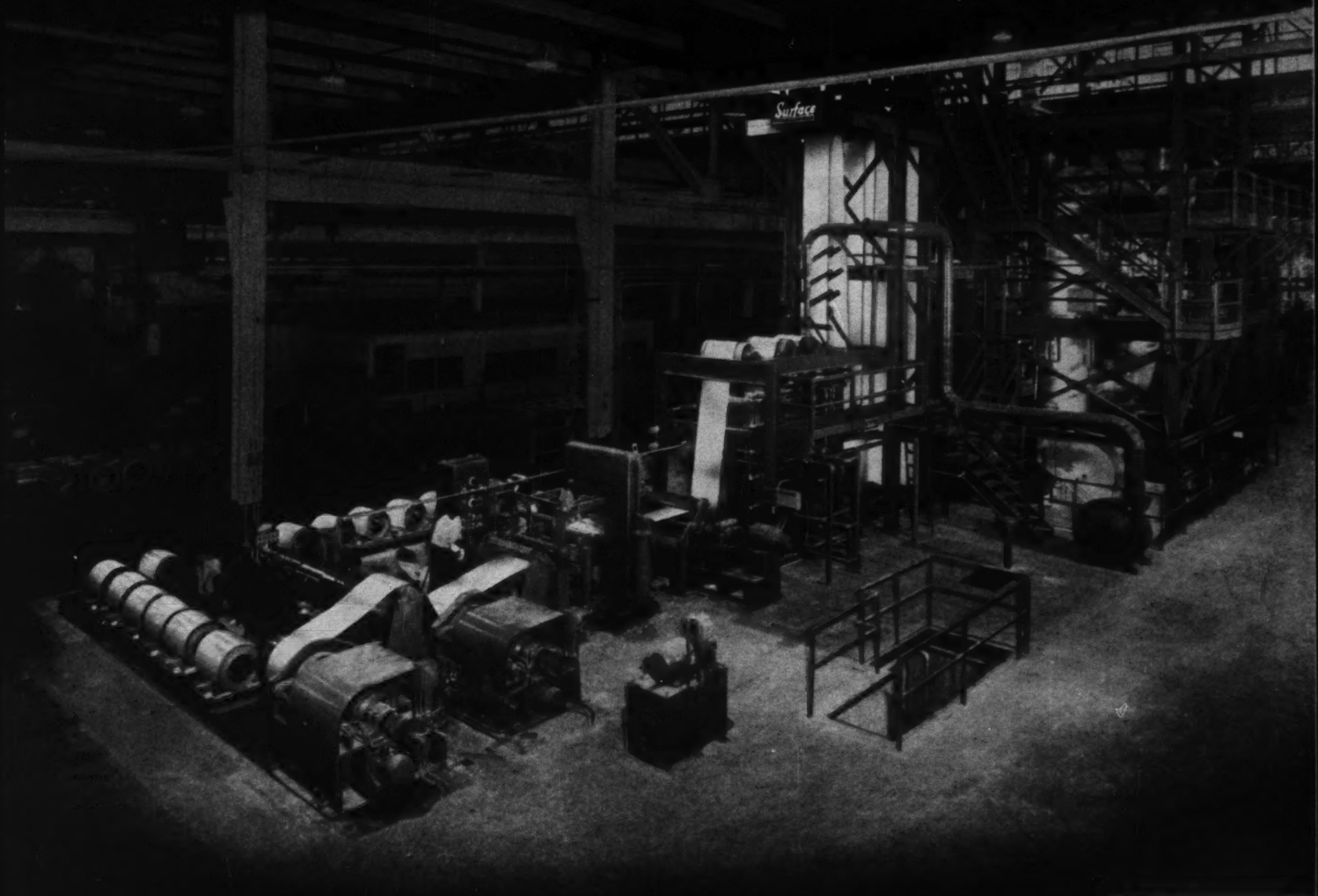
New Control System—A contract for a solid state, electronic combustion control system in the iron and steel industry has been awarded Hagan Chemicals & Controls, Inc., Pittsburgh. An advanced Hagan PowrMag system will be installed on a 2-zone slab heating furnace at the plant of an eastern steel producer in mid-1960.

Eastern Acquisition — Wheelabrator Corp., Mishawaka, Ind., manufacturer of blast cleaning equipment, steel abrasives, and dust and fume control equipment, has acquired 80 pct of the controlling stock of Lord Chemical Corp., York, Pa. As a subsidiary, Lord Chemical will still operate in York, manufacturing its line of vibratory and barrel type finishing equipment.

On to the Coast — Directors of Bliss & Laughlin, Harvey, Ill., and Sierra Drawn Steel Co., Los Angeles, have approved a plan contemplating the acquisition of Sierra Drawn by Bliss & Laughlin. Both companies produce cold-finished steel bars. The acquisition of Sierra will add mills at Los Angeles and Seattle, Wash.

On Instruments—The Budd Co.'s Tatnall Measuring Systems Div. and Nuclear Systems Div. have been merged into a single entity, named Instruments Div. Main office of the division will be at Phoenixville, Pa. A second plant for testing machines is in operation at Royersford and a gamma ray encapsulation plant is located in North Philadelphia.

Chicago Headquarters—The Yale Materials Handling Div., The Yale & Towne Mfg. Co. has moved its industrial lift truck and Y-18 tractor shovel sales and service branch to Chicago. It will be located at 9335 Belmont Ave. in Franklin Park.



SURFACE POWER CONVECTION
achieves uniform grain size
at unprecedented speeds

This Surface line is designed to continuously heat brass strip at speeds up to 200 feet per minute.

But unprecedented process speed is not the only profit which can be credited to Surface Power Convection, which heats the strip. Equally important are uniform control of grain size from edge to edge, and improved surface quality.

The key to such high-speed high-quality production is the tremendous wind velocity achieved by Surface Power Convection. In this furnace, wind speeds reach 136 miles per hour—a velocity unheard-of in convection furnaces up to now.

And the best news about Surface Power Convection is that it can be applied to virtually any type of heat treating equipment you can think of—batch or continuous, direct or indirect fired, straight air or atmosphere.

You know how higher speeds and better quality could improve your profits. Surface Power Convection will give you both. Write for Bulletin SC-182.

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Can you get more wear from your shear knives?

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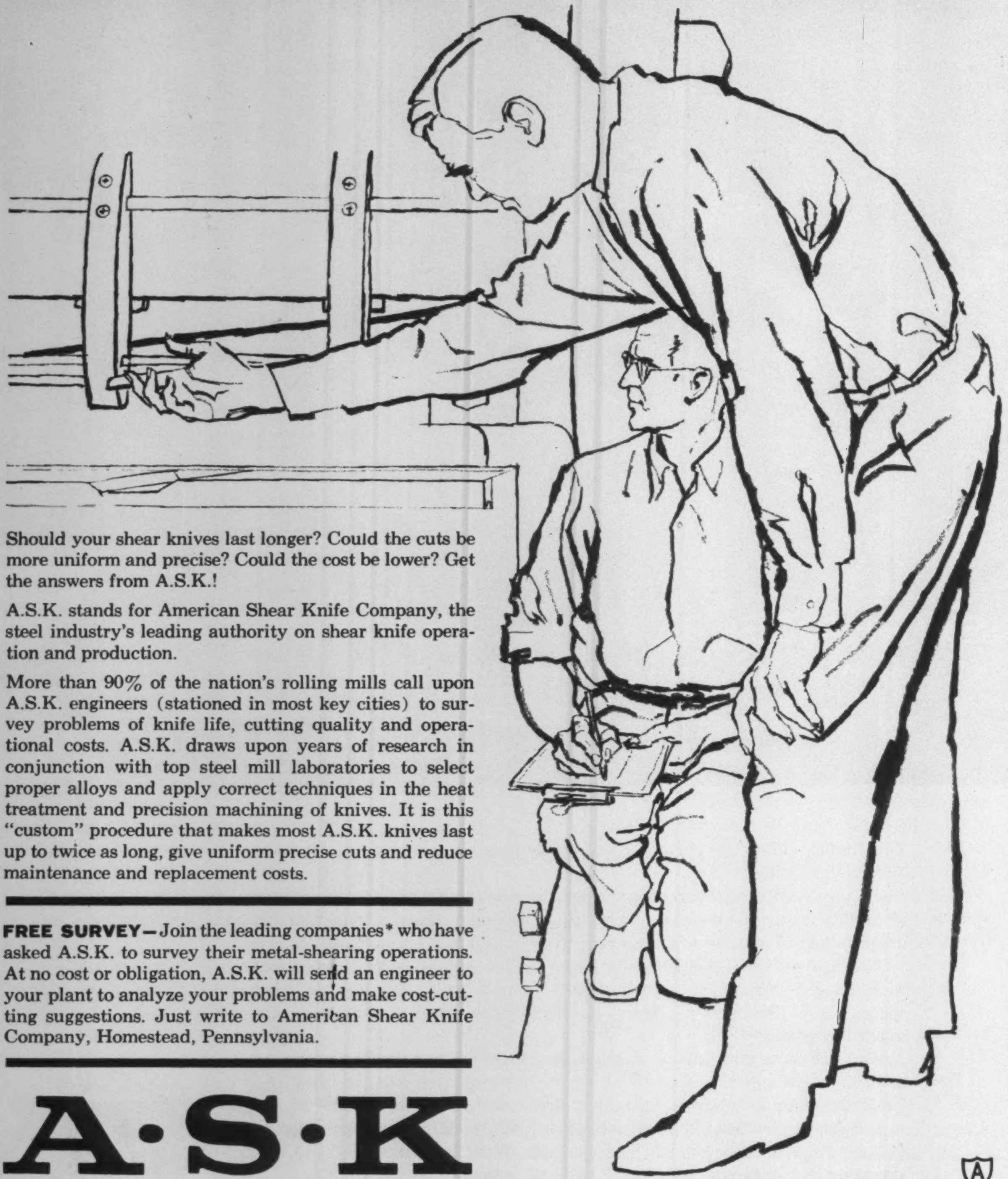

Should your shear knives last longer? Could the cuts be more uniform and precise? Could the cost be lower? Get the answers from A.S.K.!

A.S.K. stands for American Shear Knife Company, the steel industry's leading authority on shear knife operation and production.

More than 90% of the nation's rolling mills call upon A.S.K. engineers (stationed in most key cities) to survey problems of knife life, cutting quality and operational costs. A.S.K. draws upon years of research in conjunction with top steel mill laboratories to select proper alloys and apply correct techniques in the heat treatment and precision machining of knives. It is this "custom" procedure that makes most A.S.K. knives last up to twice as long, give uniform precise cuts and reduce maintenance and replacement costs.

FREE SURVEY—Join the leading companies* who have asked A.S.K. to survey their metal-shearing operations. At no cost or obligation, A.S.K. will send an engineer to your plant to analyze your problems and make cost-cutting suggestions. Just write to American Shear Knife Company, Homestead, Pennsylvania.

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AMERICAN SHEAR KNIFE

**names supplied on request*

E. M. deWindt, elected vice president and director, sales, Eaton Manufacturing Co.

Heli-Coil Corp.—**John Fasano** and **D. B. Morgan, Jr.,** appointed vice presidents.

The Morgan Engineering Co.—**E. H. Burke,** named vice president, engineering.

Illinois Tool Works—**S. S. Cathcart,** elected vice president, corporate planning; **J. D. Norman,** named general manager, Fastex Div., Des Plaines, Ill.; **H. B. Smith, Jr.,** named sales manager, Fastex Div.

Consolidated Systems Corp.—**J. J. McDonald** and **L. G. Criddle,** elected vice presidents.

Alabama Metallurgical Corp.—**A. E. Petermann,** named president.

Olin Mathieson Chemical Corp., Metals Div.—**H. E. Blaine,** appointed production control superintendent, Western Brass strip operations, East Alton, Ill., plant.

Udylite Corp.—**T. N. Urquhart,** appointed director, product evaluation; **R. P. Hayes,** promoted to chief estimator.

Vulcan Materials Co., Vulcan Detinning Div.—**E. W. Young,** named president; **G. W. Goldrick,** elected vice president, operations.

Beckman Instruments, Inc.—**Dr. L. G. Cole,** appointed vice president, research.

Jefferson Chemical Corp., Inc.—**Dr. R. F. McLeary,** elected vice president, research and development.

Manheim Mfg. & Belting Co.—**V. K. Alexander,** named vice president.

Van Norman Machine Co.—**G. P. Burns,** elected vice president and sales manager, machine tools.

Niagara Machine & Tool Works—**E. A. Munschauer, Jr.,** named director, research, and **H. S. Cheyney,** service manager.

E. C. Silver, promoted to director, purchases, Reynolds Metals Co.

Endevco Corp.—**R. R. Bouche,** appointed manager, Standards and Analysis Dept.

Master Power Corp.—**W. S. Brucker,** appointed engineering manager, Bedford, O.

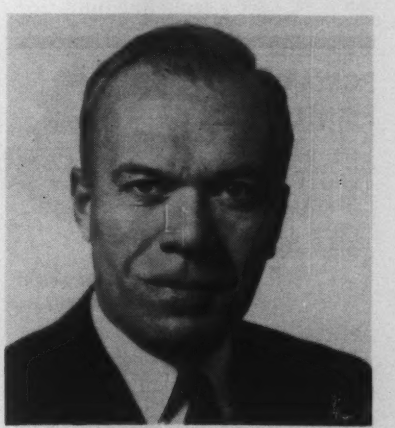
Seneca Falls Machine Co.—**R. A. Young,** appointed general sales manager.

Pittsburgh Plate Glass Co.—**P. A. Ketchum,** appointed vice president, glass sales, Merchandising

(Continued on P. 190)

D. E. Allen, elected executive vice president, Anaconda Wire & Cable Co.

W. H. Benton, Jr., elected vice president, manufacturing, Anaconda Wire & Cable Co.



J. L. Tindale, named vice president, marketing and sales, Anaconda Wire & Cable Co.

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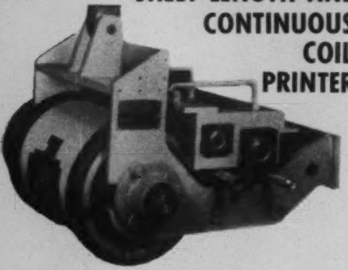

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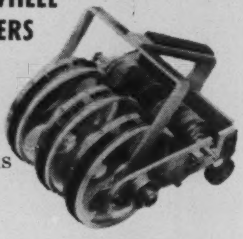

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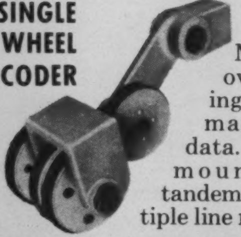

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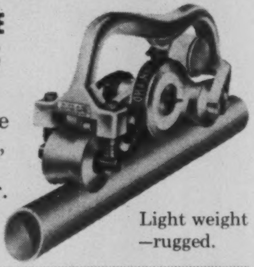

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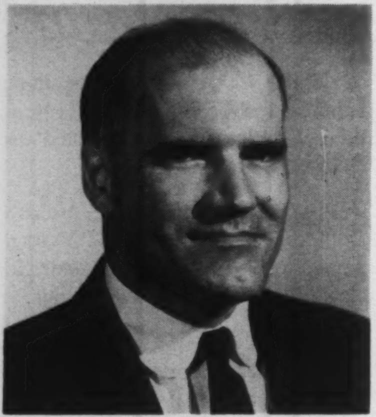
(Continued from P. 189)

Div.; **H. J. Mather,** named vice president, industrial sales, Paint Div.

American - Standard, Industrial Div.—**J. J. Rich,** appointed purchasing agent for the division's Dearborn, Mich., plant.



E. H. Sangwine, named manager, process and engineering development, Metals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.

The Youngstown Sheet & Tube Co.—**R. J. Carothers,** appointed asst. superintendent, No. 1 blooming mill, Indiana Harbor Works.

The Carborundum Metals Co.—**L. B. Hoskins,** appointed manager, manufacturing, Akron, N. Y., and Parkersburg, W. Va., plants.

A. F. Garcia, appointed manager, reduction operations, Metals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.

W. J. Stephens, will become asst. vice president-sales, Bethlehem Steel Co.

Ford Div., Ford Motor Co.—**M. S. McLaughlin,** appointed general sales manager, and **W. J. Cooper,** named Ford's western regional sales manager at San Jose, Calif.

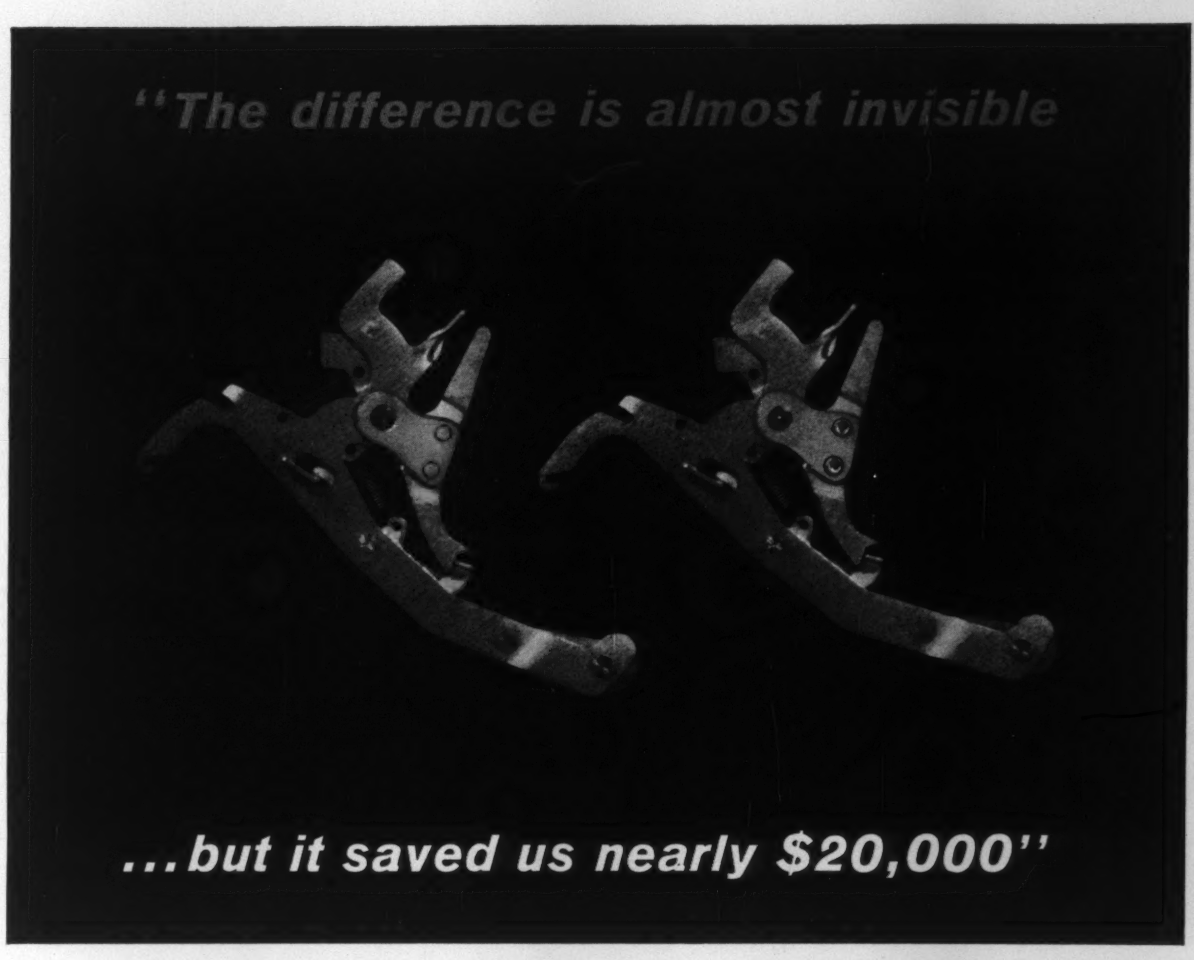
Climax Molybdenum Co., Div. of American Metal Climax, Inc.,—**J. V. Houston, Jr.,** appointed asst. manager, West Coast sales and development.

D. C. Roscoe, will become general manager, sales, Bethlehem Steel Co.

Chemetron Corp., National Cylinder Gas Div.—**D. W. Gierke,** named quality control manager.

Allied Chemical Corp., General Chemical Div.—**V. A. Romito,** appointed director, production.

(Continued on P. 195)


"The difference is almost invisible
...but it saved us nearly $20,000"

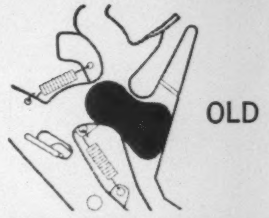
Royal McBee had been using solid rivets and a staking machine to put together an assembly for their Royal electric typewriter. Lots of hand operations, lots of chances for scrap-making fumbles. Still, production costs were satisfactory . . . until suddenly the production rate had to be almost doubled. Costs really jumped.

Their TRS man suggested dropping solid rivets for semi-tubular ones, automatically machine-fed and set, with a special TRS-designed loading fixture to fumble-proof the whole operation. Result: the increased number of perfect assemblies a day . . . with the same operating crew using standard TRS riveters already available at Royal McBee.

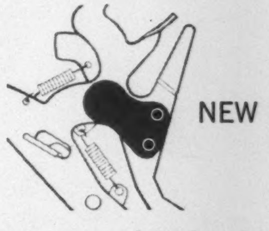
Let the TRS man look over your assemblies. You'll find that he has the viewpoint of a manufacturing engineer, and an unusual knack for making fastening simpler, faster, better.

Of course he will recommend TRS rivets. But he will give you sensible reasons why they are more reliable in essential qualities and uniformity. Superior Quality Control is one significant result of a five-year modernization of this pioneer company. Modernization of people, policies, production and service facilities. *You'll like to do business with the new TRS . . . we'll make sure of it.*

THE CHANGE THE **TRS** MAN MADE



Two operators assembled 2 solid rivets and 1 shouldered stud into countersunk holes of trip pawl, placed this on a tray, then placed carrier arm over stud. Third operator positioned bearing plate over rivets and stud, lifted the loose assembly from the tray and slid it under a staking machine to stake the 2 rivets.



The countersink is eliminated, in all three locations. On the special TRS sliding fixture, each operator assembles all components over 2 locating pins, with the stud in place. The loaded fixture is then slid into riveting position, and the riveter is actuated by a foot lever to fasten the assembly with 2 semi-tubular rivets.

Don't Buy Riveting Machines until you learn how the TRS **PAR** *process revolutionizes riveting*

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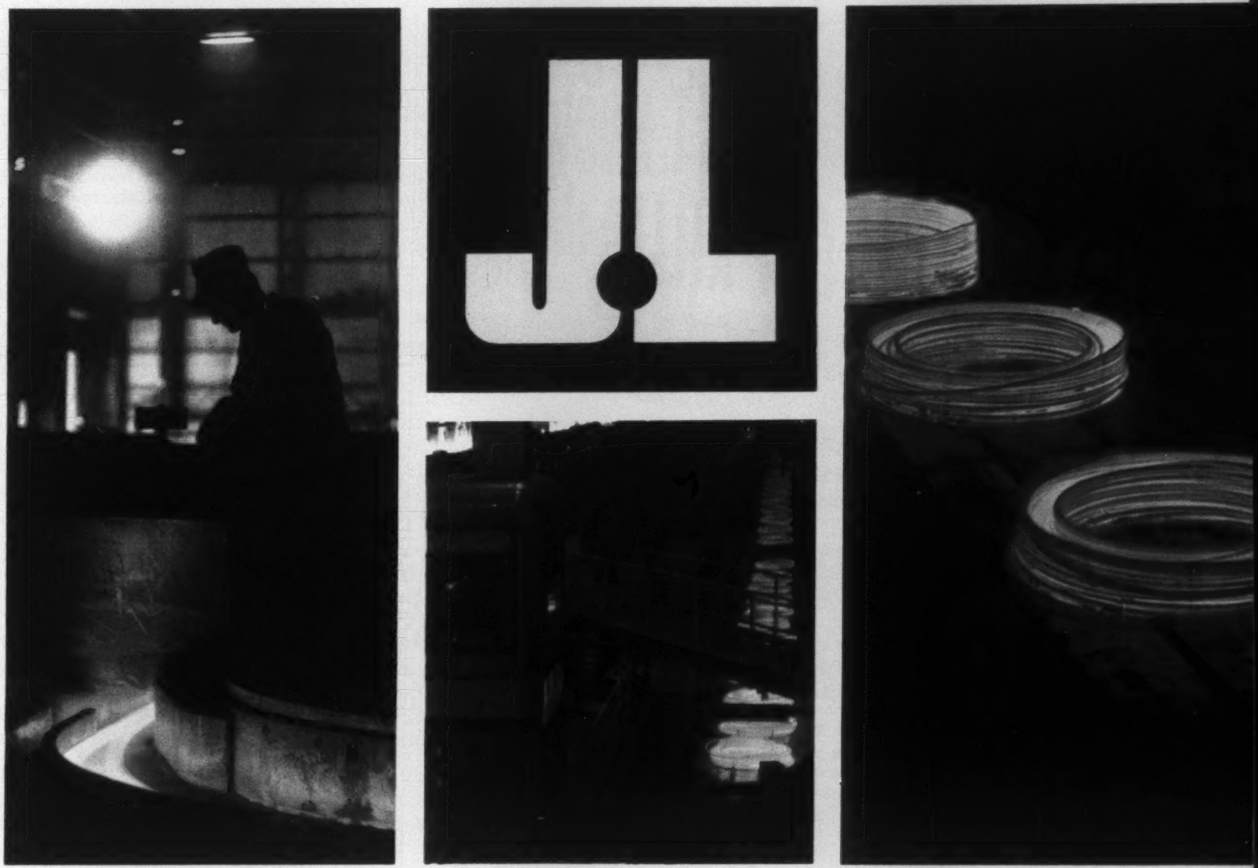

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We may not know your production equipment
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and, we do know all about scrapless nut quality hot rolled steel bars and the techniques in metallurgy and in nut-forming that result in smoother production runs, fewer rejects and less waste. We know how to achieve the precise balance and uniformity in steel bars to provide you with the best combination of nut-forming properties. We can assure optimum metal flow characteristics and shear strength so that the steel will cold work easily and will not crack. We control steel to low rates of strain hardening so that large volumes of metal can be upset without annealing. Most important, we regard your nut-forming problems as our major challenge. . . .

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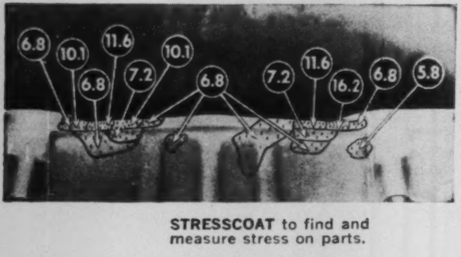

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MAGNATEST electronic testing for hardness, conductivity, alloy, proximity, and many more.

And still other methods and techniques, some completely new.

(Continued from P. 190)

Micromatic Hone Corp.—**J. H. Greening,** appointed director, engineering.

Sylvania Electric Products Inc., Chemical and Metallurgical Div.—**A. M. Asherman,** appointed manager, market research.

The Carborundum Co. — **J. F. Claydon,** elected vice president.

Kaiser Aluminum International —**F. R. Morrow,** appointed Pacific area operations manager, Oakland, Calif.

Duff-Norton Co., Worm Gear Jack Div.—**J. F. English,** named district sales manager.

Pangborn Corp.—**G. D. Robinson,** named abrasive sales engineer, Chicago district.

Baldwin-Lima-Hamilton Corp., Industrial Equipment Div.—**F. A. Fielder,** named general manager.

The Anaconda Co., South American Div.—**W. H. Swayne,** appointed chief geologist.

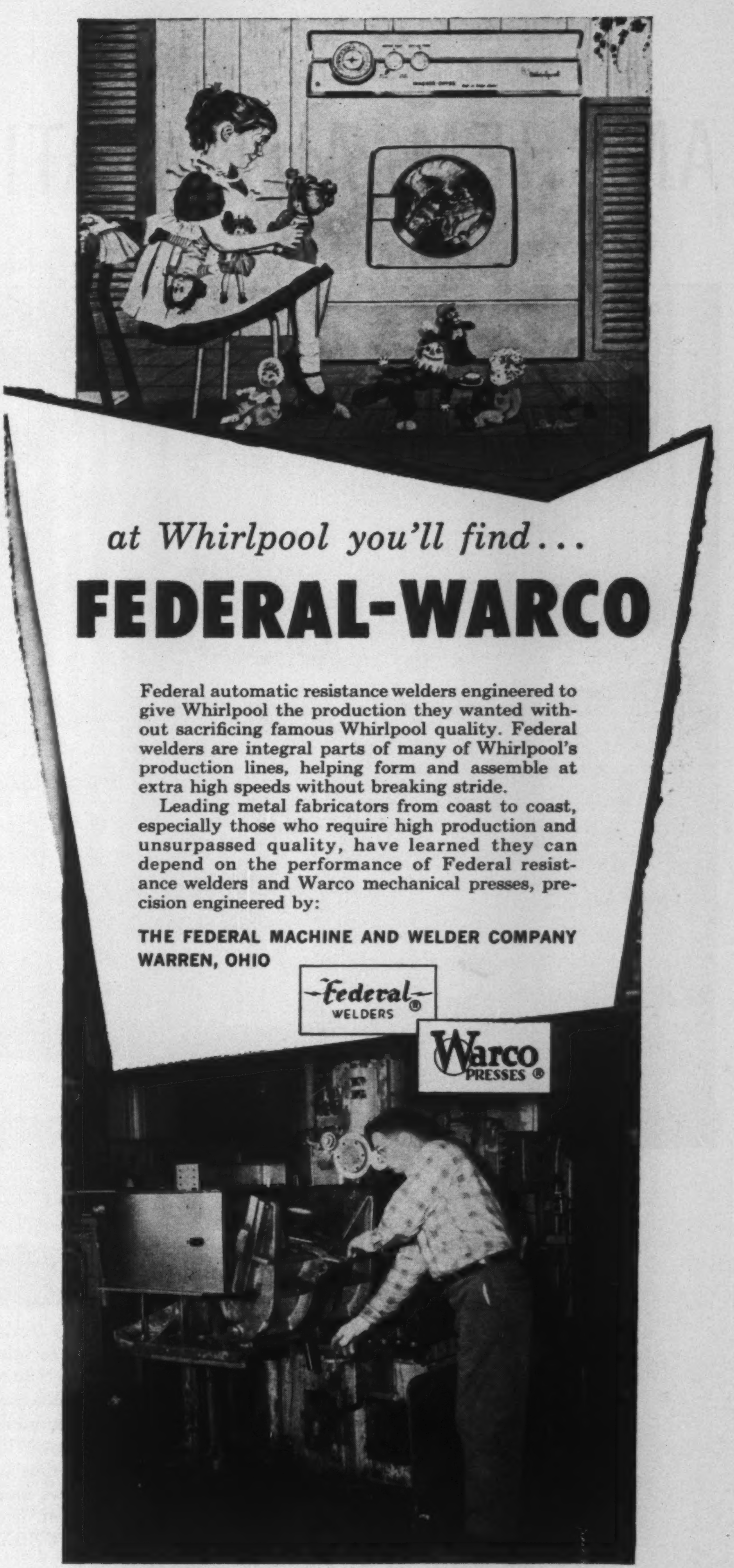
General Dynamics Corp., Stromberg-Carlson's Electronics Div.—**F. P. Norton, Jr.,** appointed Controller.

Lipe-Rollway Corp. — **W. W. Sorn,** appointed manager, manufacturing.

Federal Foundry Supply Div., Archer-Daniels-Midland Co. — **V. M. Rowell,** appointed manager, product development; **D. R. Chester,** manager, products and services; **J. M. Sweeney,** technical service manager.

Aeroquip Corp.—**M. L. Jones, Jr.,** named manager, General Logistics Div., Burbank, Calif.; and **Victor Emery,** promoted to general sales manager, Industrial Div.

The Black & Decker Mfg. Co.—**J. L. Bennett,** appointed product development manager; **R. H. Riley, Jr.,** appointed technical services manager and **S. H. Kohler,** appointed product development supervisor, Engineering Dept.



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Leading metal fabricators from coast to coast, especially those who require high production and unsurpassed quality, have learned they can depend on the performance of Federal resistance welders and Warco mechanical presses, precision engineered by:

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Federal® WELDERS

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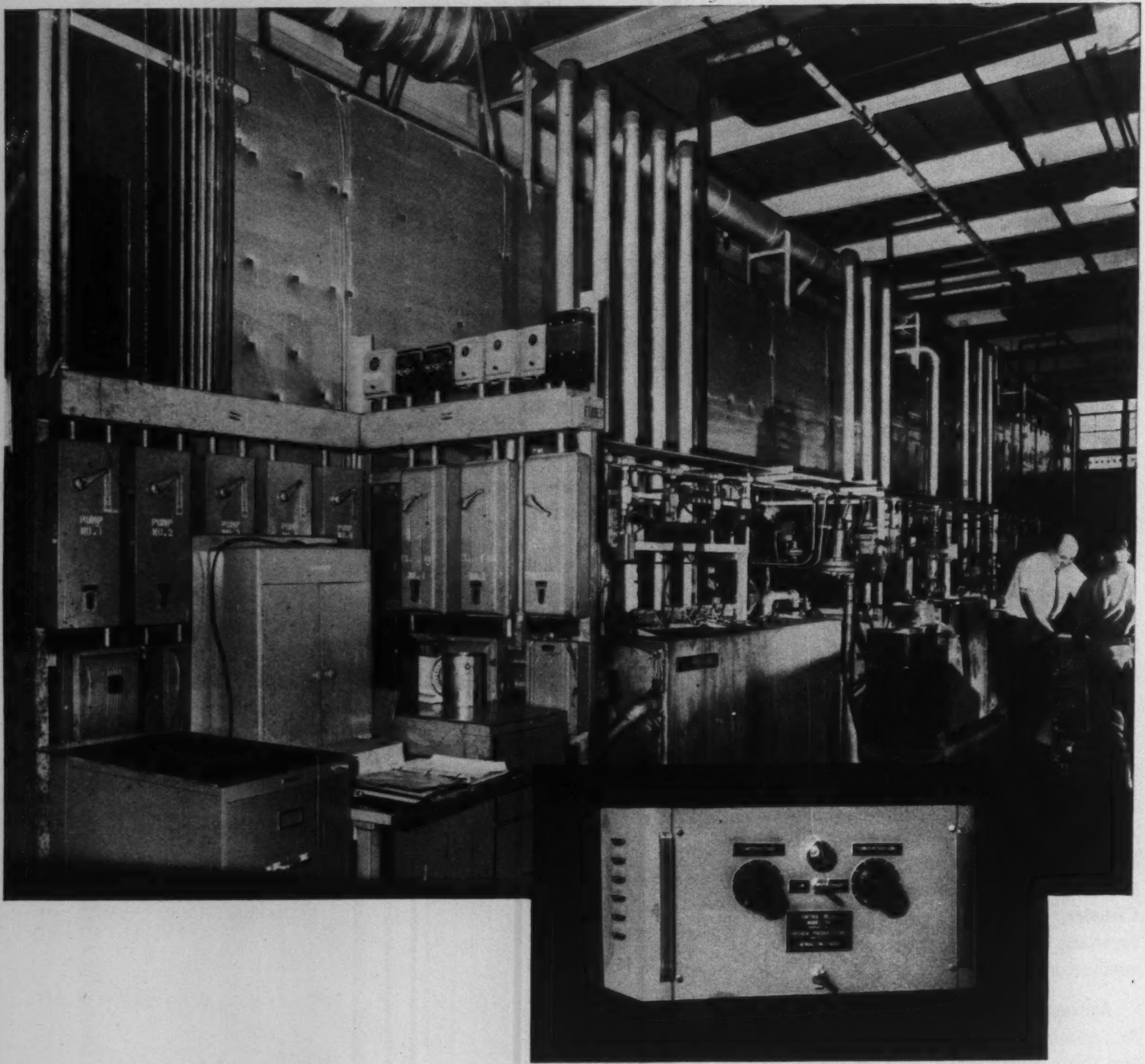
AMCHEM AUTOMATION...a new



Many industry leaders in iron, steel and aluminum fabrication are already employing AMCHEM AUTOMATION to provide unmatched product protection and gratifying production savings to these products—aluminum siding, appliances, venetian blinds, fluorescent lighting fixtures, aluminum sign blanks, steel office furniture, automotive trim, aluminum windows and doors. Give your product the same protection, the same kind of savings — with AMCHEM AUTOMATION!

concept in chemical conversion coatings assures you constant, uniform quality, actually saves you money!

AMCHEM AUTOMATION means new standards of protection for your metal products with actual black-and-white savings in time and money you can't afford to ignore!

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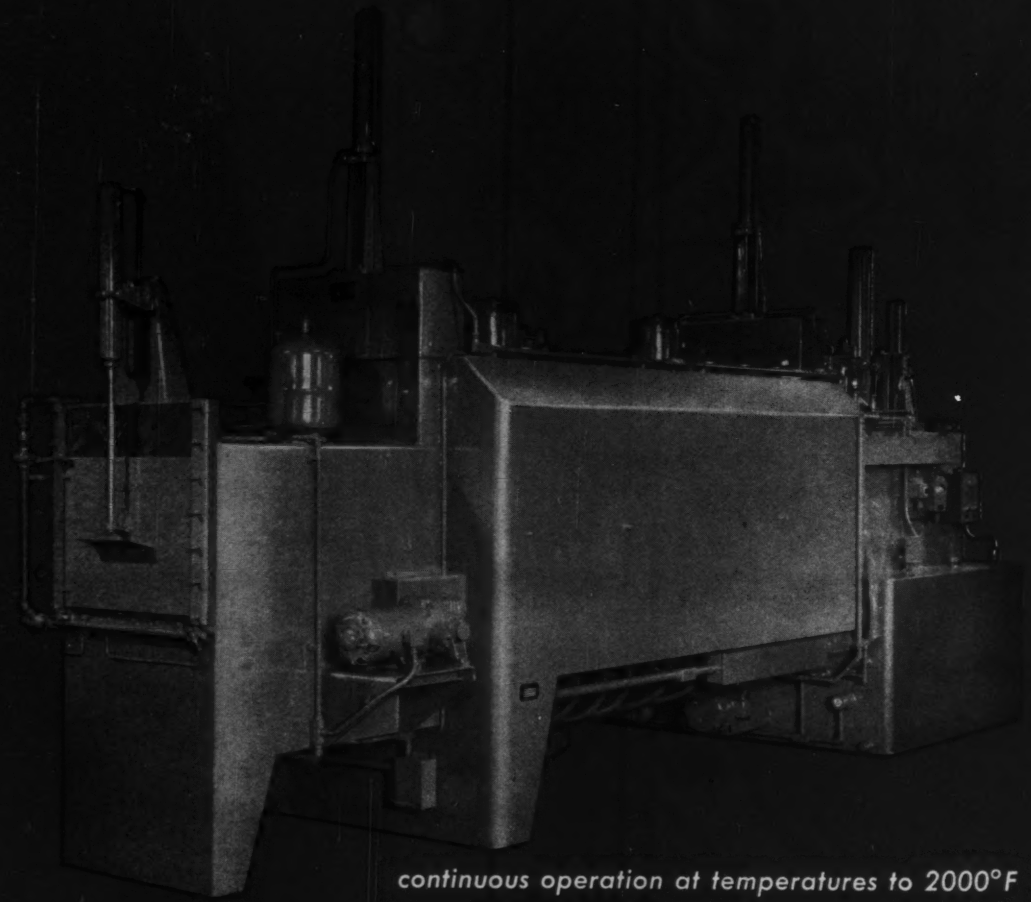

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The IRON AGE

Survey Report 1960

Metalworking Industry Executives Forecast 1960 Outlook For—

Prices
Sales
Profits
Backlogs
Inventories

■ This special survey was made by The IRON AGE to bring you the opinions of top executives of the major metalworking industries listed below. They report to you on what they plan to do about prices this year . . . what they expect in the way of sales . . . how these will affect profits. You can check inventory and backlog conditions in any of these industries, see how the men who run them feel about their prospects for 1960.

Answers to survey questionnaires received by The IRON AGE in mid-November of 1959 cover a cross section of the industries listed below. There are actually 19, because conveyors and cranes are combined with hoists and monorail systems because they are related.

Replies were received from executives of companies which employ 32.5 pct of all plant workers in these industries.

The next three pages of this section summarize the overall outlook for all 19 industries. The pages following report on individual industry groups.

For Overall Outlook and Reports by Industry See:

SURVEY SUMMARY P. 200

Construction Machinery P. 204
Conveyors, Cranes and Hoists P. 208
Copper and Brass Rolling P. 212
Electric Motors P. 216
Electrical Controls P. 220
Fasteners P. 224
Gray Iron Foundries P. 230
Heat Treating Equipment P. 234
Industrial Trucks P. 238
Instruments P. 242
Machine Tools P. 246
Malleable Iron Foundries P. 250
Nonferrous Foundries P. 254
Pumps and Compressors P. 258
Stampings P. 264
Steel Forgings P. 268
Steel Foundries P. 272
Welding Equipment P. 276

Price Increases Will Be Small

- Prices of metals and machinery will inch up again this year. None of the 19 industries surveyed expects an advance of more than 4 pct (brass mills, conveyor and hoist manufacturers). A few expect to hold the line on most products.

The average price increase of 2 pct would be about what took place last year. Machinery prices moved up a bit over 2 pct, nonferrous metals were up about 4 pct; iron and steel were advanced only about 1.3 pct.

Most estimates were made on the assumption that the steel impasse would not have any severe inflationary effects.

Consumer prices (all items) moved from 123.8 pct of the 1947-1949 level in December 1958 to 125.5 in October 1959. Wholesale prices were almost constant during the year, because lower farm prices offset other increases.

In such fields as machine tools, fasteners, and in some instrument lines, the major price problem is foreign imports. In addition to imports, the brass mills are worried about fluctuations in copper prices which could lose them more business to other materials.

Sales Should Be Better

- The 19 metalworking industries surveyed by The IRON AGE expect their 1960 aggregate sales to be up by about 9 pct. This is a weighted average based on value added by manufacture.

The groups vary widely in their appraisal of 1960, though all expect a better year than last. Machine tool builders are the most optimistic: On the average they look for a 14 pct sales increase based on better general business, more automatic controls and the stimulus of the Machine Tool Exposition this fall.

Least optimistic are builders of construction machinery. Slashes in Federal highway program funds are to blame.

Planning for better than average increases are makers of heat treating and of welding equipment, plus the steel foundries. These groups look for 12 pct sales increases.

All in all, it should be a banner year if a 9 pct overall gain is chalked up. Durable goods manufacturers entered 1959 at a level (seasonally adjusted) some 152 pct over the 1947 - 1949 average. By June, just before the steel strike, it hit 172. It was down to 157 by the end of October but was climbing again as the year ended.

And Profits a Little Higher

- If profits come up to expectations of the metalworking industry executives replying to this survey, 1960 will be a very fine year.

Again, machine tool builders are most optimistic; for the industry, the average profit increase expected is 13 pct. This group had an atrocious year in 1958, improved somewhat in 1959. Others predicting a much better year include makers of electrical controls, heat treating equipment and nonferrous founders—all looking for 10 to 11 pct better earnings.

The 7 pct increase figure at the right, like those for prices and sales, is a weighted average of all 19 industries.

For the first three quarters of 1959, metalworking profits were some 40 pct ahead of the comparable 1958 period. These are after-tax profits as reported by the Securities and Exchange Commission and include primary metals and automobiles. The latter are not included in this 19-industry survey.

For the same two periods, fabricated metals and machinery profits were up 43 pct.

In many lines, then, the outlook is for less rapid rises this year.

Some industries plan price boosts

of about 4 pct

A few will hold the line

The average will be

Up

2

Pct

The sales volume picture varies from

14 pct in Machine Tools down to

5 pct in Construction Machinery

For all industries surveyed

The average should be

Up

9

Pct

Tool Builders see profits going up 13 pct

Stampers, Iron Founders, makers of

Pumps and Compressors see 5 pct or less

The average figures to be

Up

7

Pct

Backlogs Up, Stocks Off

This will be a year of inventory buildup, with the first half marked by a rush to rebuild consumer steel supplies.

Backlogs, as expected, are a lot healthier than a year ago.

▪ The steel industry will have to make a lot more steel than its customers chew up this year. That is the significance of these inventory figures. To fill the pipelines and partially rebuild stocks should take about 70 million ingot tons of steel during the first half—which is just about all the industry can make.

Outstanding among industries with raw material supplies ahead of what they were a year ago are the foundries. On the opposite end of the see-saw are stampers and fastener makers, based almost entirely on steel.

Backlogs are almost all well ahead of what they were a year ago. There are only two exceptions: (1) Nonferrous foundries, which are about the same, and (2) makers of pumps and compressors, who figured to have about two weeks' less business on hand at the end of 1959 than they did a year ago.

Because of different process times, backlog size is not a measure of the relative outlook among different industries. The only basis is comparison with year-ago figures.

(**Reprints** of this or any other section of "Survey Report, 1960" may be had as long as supplies last).

Survey Replies on Backlogs, Inventories

	Average Number of Days Backlog*			Raw Material Inventories*		
INDUSTRY	End of 1958	End of 1959	Percent Change	Below End of 1958	About the Same	Above End 1958
Construction Machinery	58	68	+17 Pct	44 Pct	24 Pct	32 Pct
Conveyors, Cranes, and Hoists	154	200	+30 Pct	63 Pct	20 Pct	17 Pct
Copper and Brass Rolling	23	57	+104 Pct	59 Pct	33 Pct	8 Pct
Electric Motors	58	88	+52 Pct	23 Pct	5 Pct	72 Pct
Electric Industrial Controls	74	90	+22 Pct	37 Pct	15 Pct	48 Pct
Fasteners	33	42	+27 Pct	65 Pct	24 Pct	11 Pct
Gray Iron Foundries	31	34	+10 Pct	14 Pct	43 Pct	43 Pct
Heat Treating Equipment	78	104	+33 Pct	42 Pct	11 Pct	47 Pct
Industrial Trucks	69	104	+51 Pct	45 Pct	9 Pct	46 Pct
Instruments	60	65	+8 Pct	38 Pct	35 Pct	27 Pct
Machine Tools	60	87	+45 Pct	21 Pct	46 Pct	33 Pct
Malleable Iron Foundries	32	39	+18 Pct	5 Pct	58 Pct	37 Pct
Nonferrous Foundries	51	50	−2 Pct	2 Pct	45 Pct	53 Pct
Pumps and Compressors	79	65	−18 Pct	41 Pct	34 Pct	25 Pct
Stampings	60	87	+45 Pct	86 Pct	10 Pct	4 Pct
Steel Forgings	70	91	+30 Pct	78 Pct	13 Pct	9 Pct
Steel Foundries	49	68	+39 Pct	15 Pct	44 Pct	41 Pct
Welding Equipment	51	135	+165 Pct	43 Pct	20 Pct	37 Pct

*Replies by industry, weighted by plant size.

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Nashville, Tennessee

Optimism in Construction Goods

But Industry Faces Tough Marketing Problems

Builders of construction and mining equipment see some sales problems ahead.

But, despite this, they are confident both sales and profits will increase in '60.

▪ Construction and mining equipment makers face many problems this year. But, as a group, they are confident about the sales outlook.

Manufacturers surveyed believe an average sales increase of 5 pct is due in 1960. With this will come an average increase of 4 pct in profits.

Problems to Meet—The causes for concern among manufacturers are varied. They include: The slowdown of the federal highway program, steel shortages, more competition from imported equipment, and price-cutting.

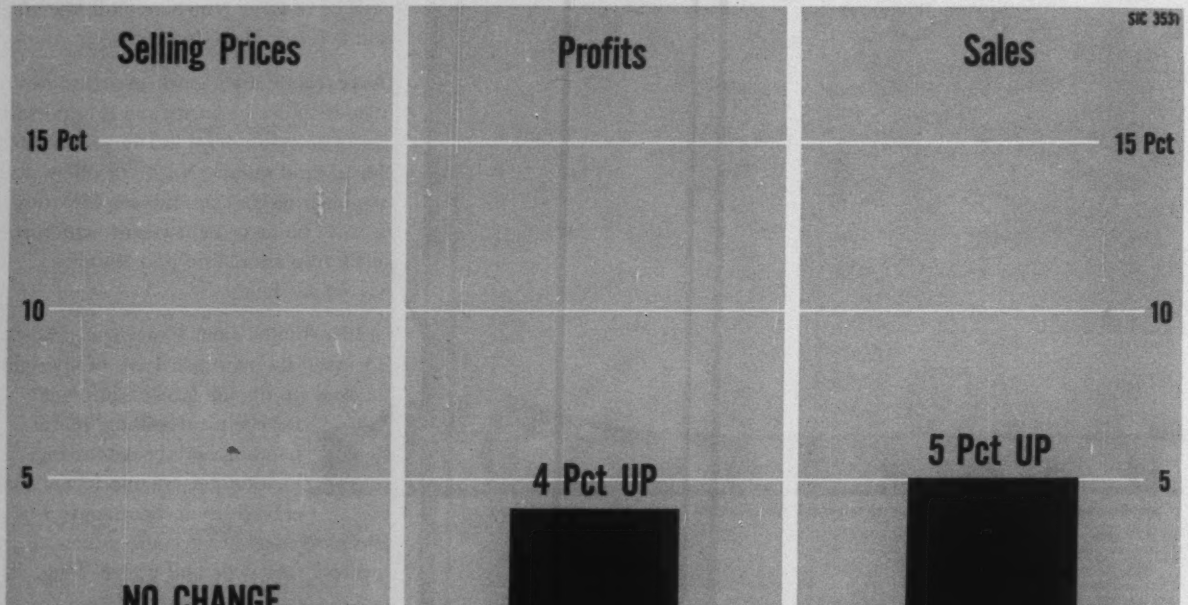
Makers of construction equipment and materials believe efforts to stretch out the U. S. Interstate Highway program hurt sales in late 1959. They expect the trend to carry over into this spring. The changes in federal and state highway spending will affect contractors' activity. This, in turn, will hamper buying of contractors' equipment.

However, a strong year in other construction spending, including housing, would help the industry. So would the revival of the coal industry.

Better Climate—The construction equipment industry can now produce and ship an estimated $3 billion worth of products each year. During 1959 it operated at 60 pct of capacity, compared with 85 pct in 1956 and 68 pct in 1958.

This year, the U. S. Dept. of Commerce predicts, shipments should total $2 billion. The industry can expect an increase in produc-

Better Profits in Construction Equipment



tion, shipments, and employment.

Steel Strike's Effects—The effects of the steel strike are also worrying construction machinery makers. During 1959, the strike brought cutbacks in construction work, pipeline projects, and related activity.

In addition, the strike hurt deliveries of equipment. These difficulties are expected to continue during the early months of '60.

With competition increasing, the industry is stressing marketing. Greater emphasis will be put on more direct contacts with customers.

New Products Planned — Additionally, the equipment makers are bringing out new or improved products. Almost two-thirds of those surveyed by The IRON AGE plan to introduce new products this year.

Prices appear stable for the next twelve months. The majority of manufacturers don't expect any price increases. On the contrary, the price competition of the last few years will probably continue.

Manufacturers' backlogs (weighted on plant employment) have increased about 17 pct.

SIC 3531

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: ↑ HIGHER

Finished Goods: ↓ LOWER

↑ At End of 1959 ↓

ORDER BACKLOGS: Average 68 Days ↑ 17 Pct UP

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Federal highway program and revival of the coal industry." G. Barcamian, Asst. Treasurer, **Marion Power Shovel Co.,** Marion, Ohio.

"Marketing problem. Cautious buying attitude by construction industry buyers." J. R. Steelman, President, **Koehring Co.,** Milwaukee, Wis.

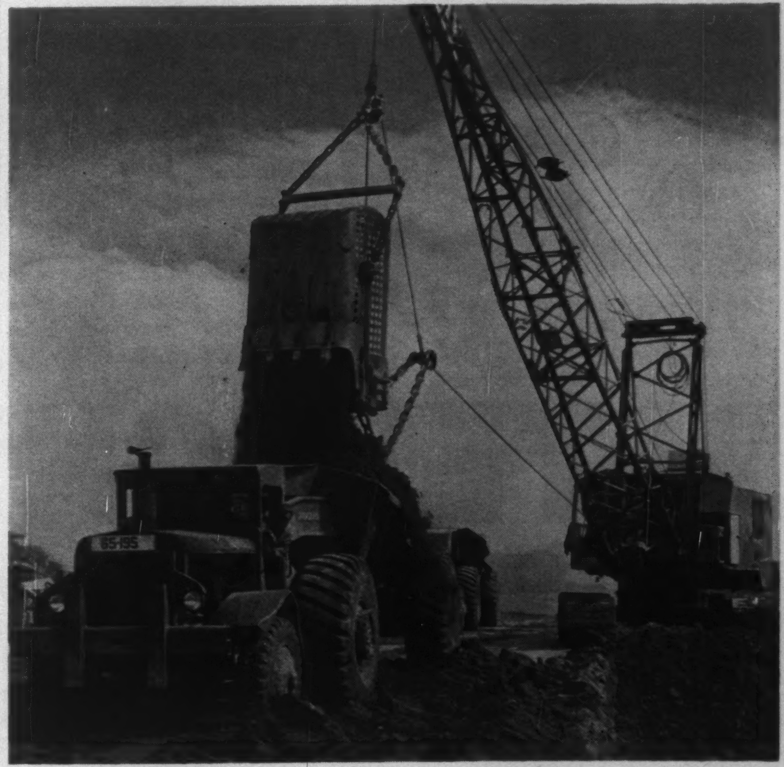
"Steel shortage most likely will slow down construction, but we expect profit margins to improve, and liquidation of slow moving inventory items, both of which have been severe handicaps in our business the past year or more." M. Holmgreen, President, **Alamo Iron Works,** San Antonio, Texas.

"Use of aluminum in truck mixers." W. A. Holden, President, Construction Machinery Co., Waterloo, Iowa.

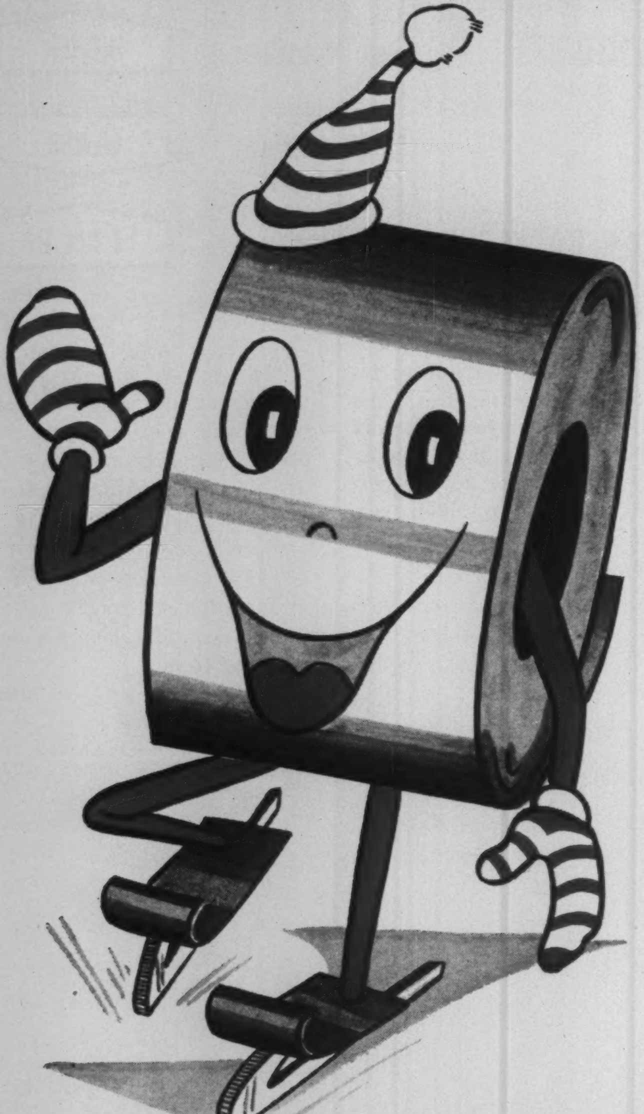
"Housing should be steady. Road programs about or above average, pipe lines are forecasting an increase. The rail strike, if it comes in February, could have a dampening effect on shipments of large equipment for a short time. All in all, 1960 should be a good year for construction machinery sales." H. Holdsworth, President, **Parsons Co.,** Newton, Iowa.

Continued

American Roadbuilders Assn. Photo



HIGH CARBON STRIP



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THE 52100 HOUSE

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DETROIT, MICHIGAN • MELROSE PARK, ILLINOIS

"Keen competitive salesmanship will have to be demonstrated to make sales—sell the product and talk price later." D. G. McIntyre, Vice President, **Skagit Steel & Iron Works,** Sedro Woolley, Washington.

"We are now working on several technical development projects which will no doubt have some effects on our industry. The marketing problem—well that is one for each individual to work out. In the construction machinery distributors fraternity the sales forces have become overly big-equipment minded. It seems that is changing now due to shrinking profits. This in turn will ease our marketing problems to quite an extent." E. R. Standfuss, President, **Burch Corp.,** Crestline, Ohio.

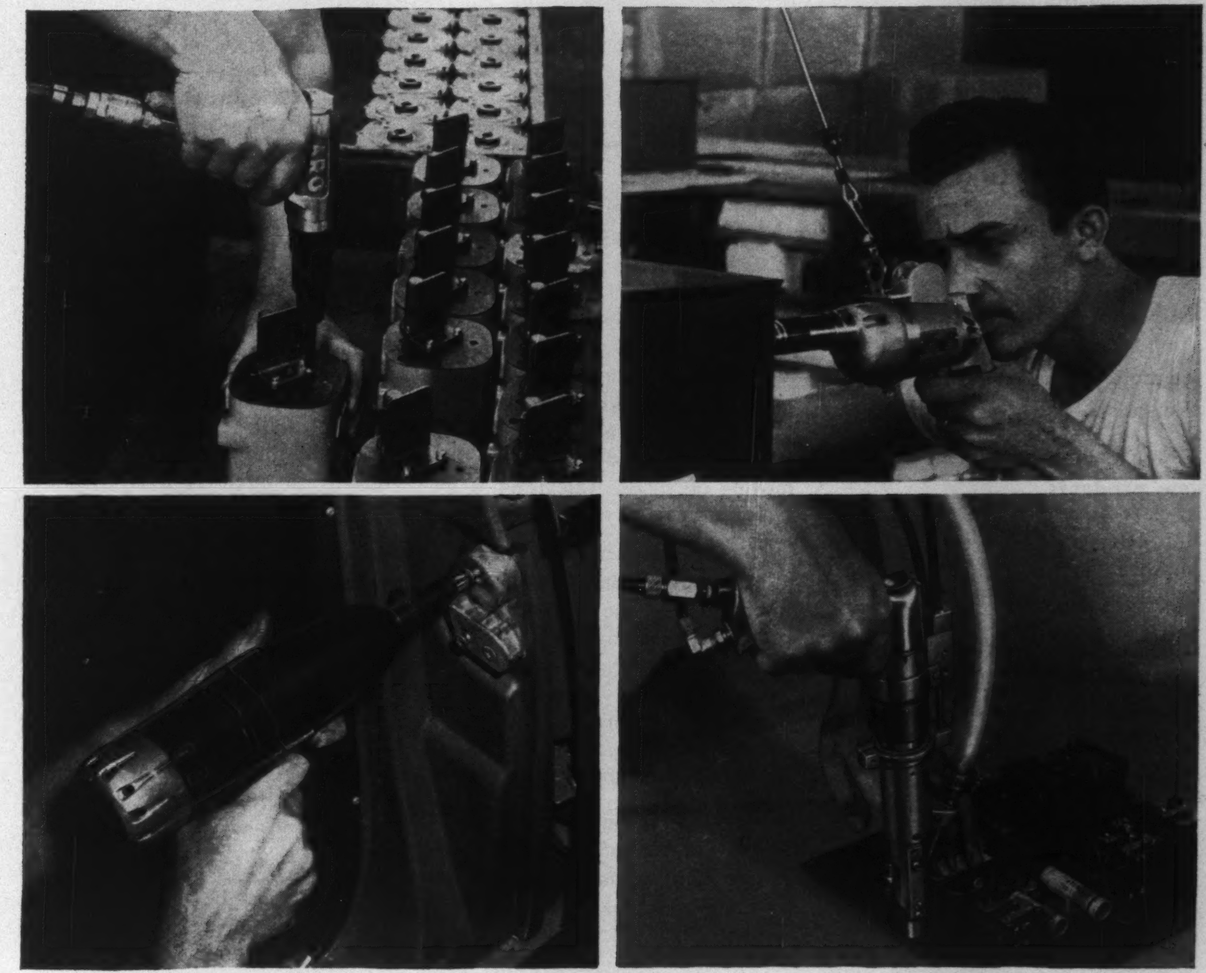
"Import of competitive equipment." G. P. Towle, President, **Sturtevant Mill Co.,** Boston.

"New techniques involving revised designs and hydraulic powered equipment. New techniques in marketing will involve more direct contact with customers, branch offices and distributors." H. W. Botten, President, **Owen Bucket Co.,** Cleveland.

"The partial wrecking of the U. S. Interstate Highway program through political bickering in Washington seriously affected fall business of all firms producing construction equipment and materials and this drag will carry over into Spring 1960. The steel strike has damaged our business also and its affect will be felt well into 1960." G. A. Cooper, Vice President, **Tampo Mfg Co.,** San Antonio.

"Meeting competition with rising prices." D. V. Blair, Vice President, **Holt Equipment, Inc.,** Independence, Oregon.

"More contracts on roads and dams will help us." J. C. Yaun, **Yaun Mfg. Co.,** Baton Rouge, La.



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Write or phone: Continental Screw Co., 450 Mt. Pleasant St., New Bedford, Mass.

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WOOD • MACHINE • TAPPING THREAD CUTTING SCREWS
HANGER AND STOVE BOLTS
SEMS • NYLOK

HY-PRO PHILLIPS INSERT BITS AND HOLDERS

Handling Equipment: More Sales

Capital Spending Will Help Boost Market

Upswing in capital spending should improve sales and profits for makers of conveyors, cranes, and hoists.

Many manufacturers count on new products.

▪ Industry's drive to cut costs and improve handling will help sales for conveyor, crane, and hoist makers this year.

The upswing in capital spending should also make 1960 a strong year for these material handling manufacturers.

Those surveyed by The IRON AGE show this optimism. More than 75 pct predict a sales increase averaging 8 pct. As a result, better earnings, averaging 6 pct, are expected.

Backlogs Climb — Backlogs of equipment makers increased with better sales in 1959. They rose 30 pct—going up from 154 days at the end of 1958 to 200 days as 1959 ended.

At the same time, stocks of finished goods declined. Over 60 pct of the manufacturers report inventories are below 1958 levels. Twenty-five pct list them as about equal with 1958. Only 12 pct say they are above '58 totals.

More New Products—Makers of conveyors, cranes, and hoists are not relying entirely on improved overall business for 1960 sales. They are also planning to expand product lines. Almost 40 pct say they will bring out new products this year.

With the trend to better handling, many manufacturers are turning out complete systems for moving raw materials and finished goods. Automated and programmed systems are designed for better materials flow.

New developments are coming into use rapidly. Electronic controls offer automatic warehousing. Memory systems speed the sorting and moving of goods. Television is an important part of new handling systems.

More Competition — Manufacturers believe the sound road to profits depends on selling these systems. The industry is more competitive. Over-capacity is another problem. Selling conveyors or other handling equipment by the pound is no longer profitable.

Concern About Steel — Steel labor troubles are bothering the industry in two ways. Many capital spending plans have been delayed. This has held up many orders for equipment.

In addition, the lack of steel has hampered production of conveyors, cranes, and hoists. Raw materials stocks are below 1958 levels for many manufacturers. Sixty-three pct say inventories are smaller than in 1958. Twenty pct report them about the same. Only 17 pct have greater raw material stocks than in '58.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Our major problem is over-capacity, and this will continue to be a problem for several years. The only solution is to sell systems which require a high degree of technical knowledge and automation equipment. The day of selling conveyors by the pound (virtually) and making a profit is over." O. A. Johnson, President, **Gifford-Wood Co.,** Hudson, N. Y.

"1. The growth of automation.

"2. Settlement of the steel strike and the consequent release of many equipment orders now held up.

"3. Liberalized depreciation.

"4. The reduction of corporate taxes—which probably is too much to expect during the next calendar year." H. L. Donahower, President, **Standard Conveyor Co.,** St. Paul, Minn.

"Coal must be upgraded. With the development of full seam mechanical mining, the cleaning and preparation of coal has become a highly technical problem. Also, recovery of coal fines is now feasible. Coal is not our only market as we build all types of bulk material handling equipment." H. R. Edelman, Jr., President, **Heyl & Patterson, Inc.,** Pittsburgh, Pa.

"Increasing number of competitors as more people try to get in the other man's business.

"Increasing importance of competition development activity." R. I. Hicks, President, **Lamson Corp.,** Syracuse 1, N. Y.

"The rapidly increasing trend to a greater degree of automotive and programmed or centrally controlled materials handling systems will cause more obsolesence of existing methods than ever before; and provide wide opportunities for ingenious designer and manufacturer. Also the spread of mechanical han-

SIC 3535, 3536

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: LOWER

At End of 1959

Finished Goods: LOWER

ORDER BACKLOGS: Average 200 Days 30 Pct UP

dling into more plants with fewer employees due to rising labor costs and further demands for increased efficiency is creating a wider market for conveying equipment." W. V. Casgrain, President, **Mechanical Handling Systems, Inc.,** Detroit.

"Holding inflation in check is the most important problem we face." R. Logan, Chairman, **Logan Co.,** Louisville.

"So called 'do-it-yourself' conveying components will continue faster development than engineered conveyor systems." J. B. Nordholt, President, **Webster Mfg., Inc.,** Tiffin, Ohio.

"The material handling business is sensitive to general business conditions including availability of and cost of money. This may be somewhat of a detriment. But the cost saving opportunities which good material handling can bring should affect some of the reluctance to spend high cost money." E. L. Hummel, Treasurer, **Rapids-Standard Co., Inc.,** Grand Rapids.

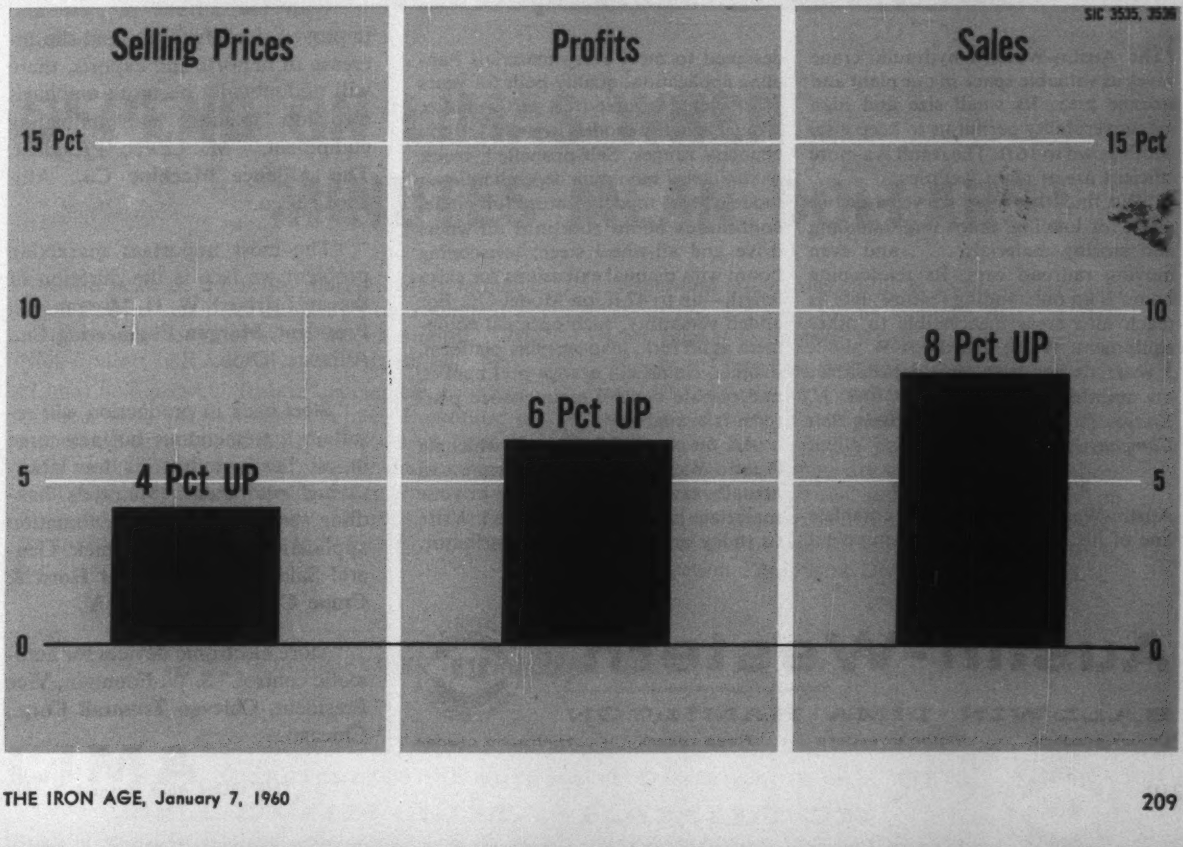
"The individual and total effect of the steel strike and following steel shortage." J. R. Hersey, Assistant Sales Manager, **C. O. Bartlett & Snow Co.,** Cleveland, Ohio.

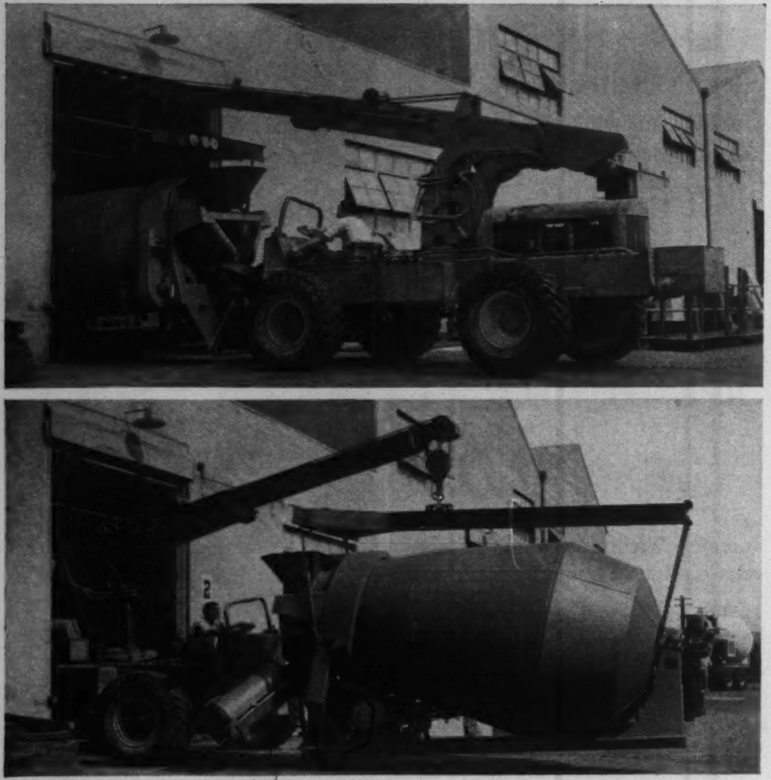
"Electronic controls—automatic warehousing and memory systems for automatic sorting and conveyorizing." M. U. Coleman, President, Conveyor Systems, Inc., Chicago.

"More automation." M. V. Knapp, President, **International Conveyor & Washer Corp.,** Detroit.

Continued

Big Backlogs Help '60 Sales Outlook





Coming out or going in . . . A-W crane easily maneuvers Cal-Rex 7-yd. concrete mixer through low clearance doorway.

A-W crane saves valuable space!

"The Austin-Western hydraulic crane saves us valuable space in our plant and storage area. Its small size and high maneuverability permit us to keep aisle width down to 16 ft. The result is a more efficient use of plant facilities.

"We find the A-W so versatile we use it for loading, unloading, handling and storing materials . . . and even moving railroad cars. Its telescoping boom is an outstanding feature; lets us reach into areas inaccessible to other equipment. We've had the A-W about 5 years. It has been very dependable; no maintenance problems."—*R. H. Knaup, Factory Manager, Chain Belt Company, Los Angeles, Calif.*

5 models available

Austin-Western now offers a complete line of lift, carry and place equipment designed to meet every materials handling application; quality-built for years of efficient, trouble-free performance. Available in five models from 3 to 10-ton capacity ranges. Self-propelled, truck or stationary mounting depending upon model. Most models feature full circle, continuous boom rotation; all-wheel drive and all-wheel steer; telescoping boom with manual extensions for extra length—up to 47 ft. on Model 410. For added versatility, such optional equipment as lift fork, load-carrying platform, magnet, clamshell, orange-peel bucket, and remote control maintenance platform is available.

Ask for proof of the ways in which an Austin-Western hydraulic crane can actually save time and money in your materials handling operations! Write us today or see your A-W distributor.

Austin-Western
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

Conveyors, continued

"New system of weighing and loading raw materials are in excess of any known equipment presently on market." H. F. Adams, Sales Manager, **Western Conveyor Co.,** Boise, Idaho.

"We believe that the modernization of existing plants will have the most influence on the material handling industry next year." C. L. Fell, Vice President, Marketing, **American Monorail Co.,** Cleveland.

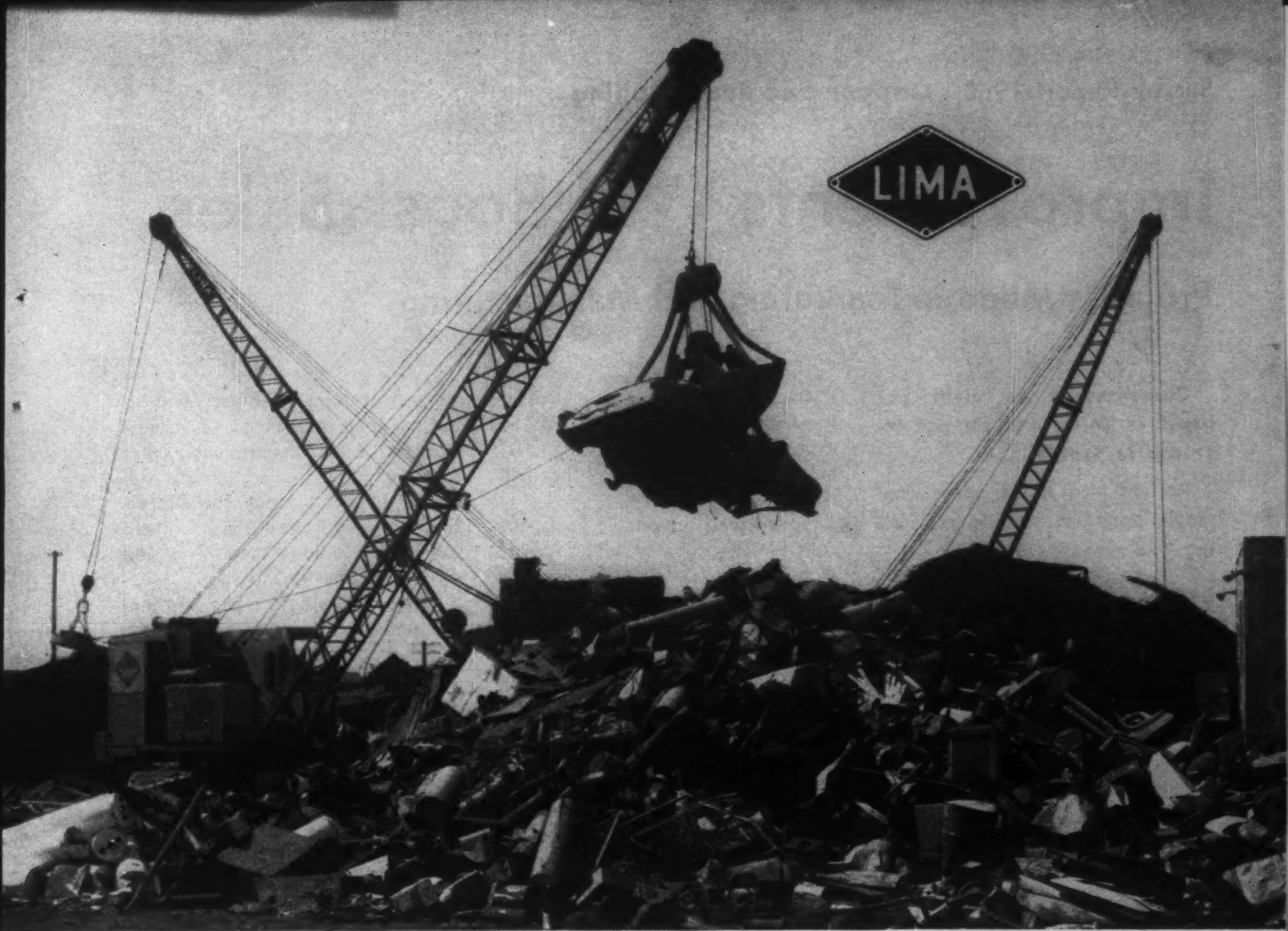
"While I don't foresee anything completely new in conveyorization in 1960, I definitely believe that there will be an increasing demand for automatic features in conveying equipment. Automation, or at least processes approaching it to a greater degree, will be more generally applied. The smaller manufacturer, too, must develop a continuous flow of his product, for he can no longer afford the manual handling and general confusion which is inherent in a non-mechanized plant." O. H. McCleary, President, **Mathews Conveyor Co.,** Ellwood City, Pa.

"With the advent of new and improved dock facilities and the increase in imports and exports, there will undoubtedly be more emphasis on ship loading and unloading equipment." M. Lewis, President, **The Alliance Machine Co.,** Alliance, Ohio.

"The most important marketing problem we face is the duration of the steel strike." W. H. Morgan, Jr., President, **Morgan Engineering Co.,** Alliance, Ohio.

"Steel back in production will result in a tremendous business urge in all heavy industries for labor-saving equipment. Materials handling equipment, and automation applications." M. M. Botnick, General Sales Manager, **Silent Hoist & Crane Co.,** Brooklyn, N. Y.

"More electronic devices for automatic control." S. W. Fountain, Vice President, **Chicago Tramrail Corp.,** Chicago.



Buffalo salvage firm says:

DEPEND ON LIMAS WHEN MINUTES MEAN DOLLARS!

"At the peak of the scrap market, when minutes mean dollars, our three Lima 34's have shipped as many as 6000 tons of scrap in one month!" says Nick Redino, of R & R Salvage Corp., Buffalo, N. Y.

"Limas hold up well. They're dependable, economical machines to own and operate. Downtime is minimal. They work at full speed 80 hours or more each week, in all types of weather and under the most rugged operating conditions—in abrasive sand, dust, mud, slush and snow. In one 2½-month period the Limas salvaged 1500 tons of scrap from brick and mill scale.

"Front end interchangeability is an important Lima advantage. It's easy for us to make daily changes from bucket to magnet. We're sold on Limas!"

There's a Lima type and size for every job—cranes to 140 tons crawler mounted, 70 tons on rubber; shovels, ½ to 6 yd.; draglines variable. Learn how dependable Lima quality can add extra profit to your operations. Limas are available with gasoline, diesel or electric power; crawler, truck or wagon mounting. See your nearby Lima distributor today or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

604

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

Improvements Will Boost Sales

Progress Made in Marketing and Manufacturing

Consensus is an eight pct boost in sales, and six pct increase in profits.

Rollers will make some dramatic improvements in marketing and manufacturing.

▪ Copper and brass rolling mills are conservative in their predictions for 1960. But they are far from conservative in their drive to improve business.

Respondents to The IRON AGE survey expect 1960 sales to be up about eight pct over 1959. But they believe that will be qualified by a four pct boost in prices. That will mean profits increased by only six pct during the new year.

Backlogs Gain — On the other hand, they wound up 1959 with an average of 57 days backlog, 104 pct more than the 23 days they had starting the year.

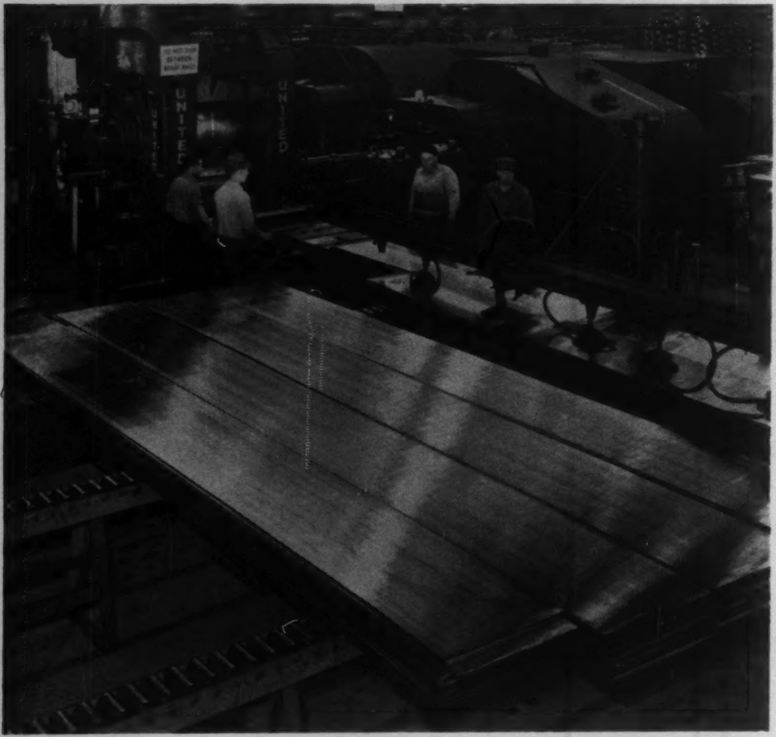
To hit their reasonable goals, the rollers will probably initiate more technical advances and dramatic market programs than in any single year in the last decade.

One major mill has already started a program requesting suggestions for new products and modification of current items. It reports the response, from the observations of their salesmen and directly from customers, has been better than expected.

All Hands—The key to the success of this program, believes the mill's chief executive officer, will be the handling and sorting of suggestions. All major departments, sales, manufacturing, research, etc., will get a chance to study the suggestions in detail and discuss them thoroughly, among themselves and on a company-wide basis.

Brass rollers have never had major quality problems. Traditionally, the largest part of their business has been high-quality, short-run specialty items. But now, more and more mills are trying to drum up long-run business so they can get into high-speed rolling and cut costs.

More Optimism — If business picks up much beyond what rollers predict, they'll have to go into the market for materials in a big way. About 59 pct answering the survey said they are starting 1960 with smaller stocks of raw materials than they started 1959 with. Only eight pct have more.

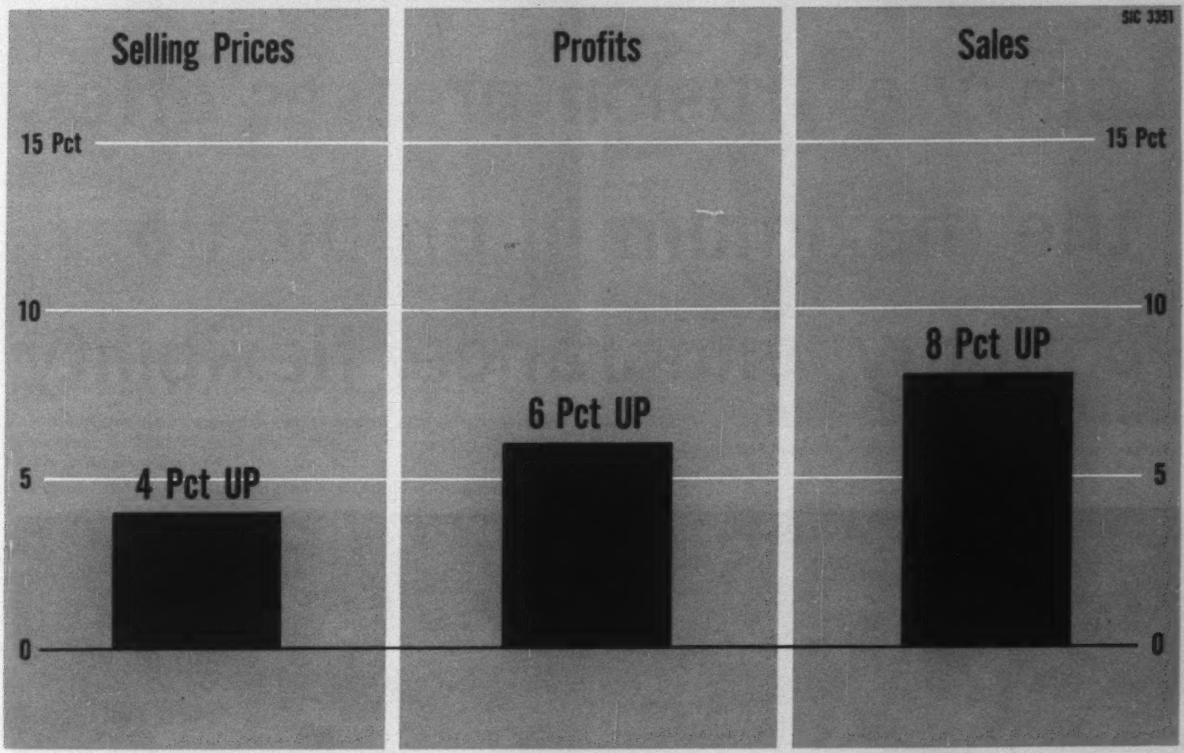


What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"The great influx of brass and copper imports at much lower prices. Also, exports of brass and copper products have been reduced due to higher prices and increased duty." C. H. Higgins, President, **H & H Tube Mfg. Co.,** Detroit.

Better Business on Longer Backlogs



"The fluctuation in copper prices could act as a deterrent on our business. If copper gets over 35¢ our customers switch to aluminum or stainless steel." G. T. Hubbell, President, **Seymour Mfg. Co.,** Seymour, Conn.

"In my opinion our biggest marketing problem will be the increased quantities of foreign products that are invading our markets at prices below our ability to compete." J. F. Murray, Vice President, **Reading Tube Corp.,** New York.

"Foreign competition will have the most important effect on our industry." E. R. Stafford, Jr., Comptroller, **New England Brass Co.,** Taunton, Mass.

"In my opinion the greatest problem with which the brass mill industry will be confronted during the coming year will be a shortage of copper which will result from prolonged industry strikes. The instability of copper prices brought about by the erratic movement of supply and demand in the past has done much to foster the promotion of substitutes. In the past decade the brass mill industry has lost some markets, not because better products were found but because brass mill products were priced out of those markets. The copper and brass industry faces a great challenge in reversing this trend." P. M. Welpton, President, **Bridgeport Rolling Mills,** Bridgeport, Conn.

"The effect of foreign imports." E. A. Oliphant, **Small Tube Products Inc.,** Altoona, Pa.

SIC 3351

How About Stocks, Orders?

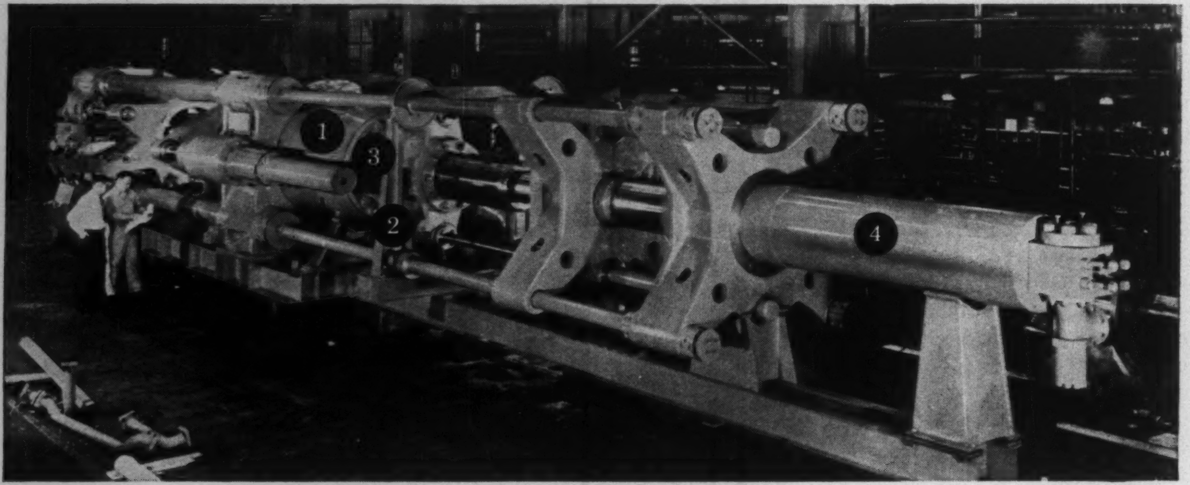
Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: **LOWER**

At End of 1959 — Finished Goods: **NO CHANGE**

ORDER BACKLOGS: Average 57 Days **104 Pct UP**

The precise reasons why Loewy extrusion presses offer the maximum in production, economy, endurance, flexibility



3000-ton-capacity water-hydraulic extrusion press with independent external piercing device

1. Inserted forged steel main cylinder
2. Simultaneous setting of stop nuts by chain attachment mandrel arresting device
3. Prefill valve connector of patented design
4. Inserted forged steel piercer cylinder

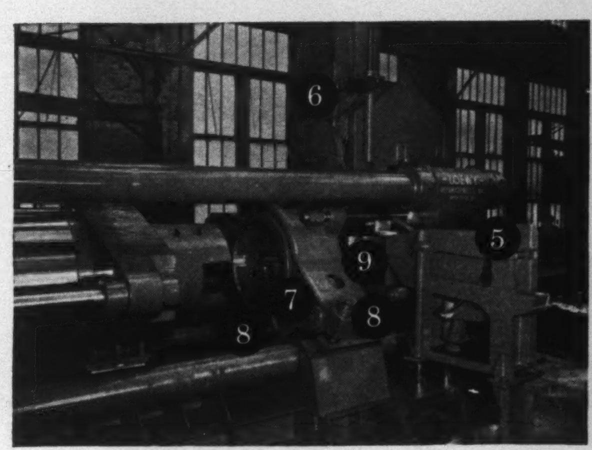
Many of the outstanding features of Loewy extrusion presses are a result of anticipating the needs of our customers. Others, of course, stem from special designs made to satisfy the requirements of a specific client. The principle of changing basic designs to meet individual requests has resulted in presses that offer maximum production, economy, endurance and flexibility.

Loewy presses can handle all extrudible metals and alloys. They allow a combination of the variable operating conditions of pressure, speed, temperature and billet size needed for a perfect product. They are, moreover, built for the utmost economy of man-hours, cycle time, horsepower, maintenance and floor space.

In our designs, pushbutton automatic control has been developed to the highest degree of functional perfection. Extrusion speed adjustment, billet, dummy and clean-out disc handling, die change and rotation—all can be fully mechanized.

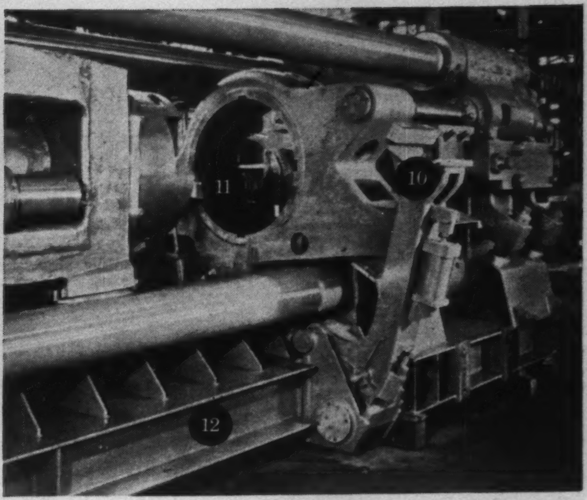
Rigid welded steel construction insures utmost precision in alignment and, where tubular products are concerned, highest concentricity. One-piece design of larger components prevents warping at high operating temperatures. Auxiliary movements are provided with independent pressure supply.

The pictorial story presented here sets forth some of the features of Loewy extrusion presses, all of which are the product of many years' study, research and development. And many other important advances are currently in the making. For detailed information, write Dept. A-1.



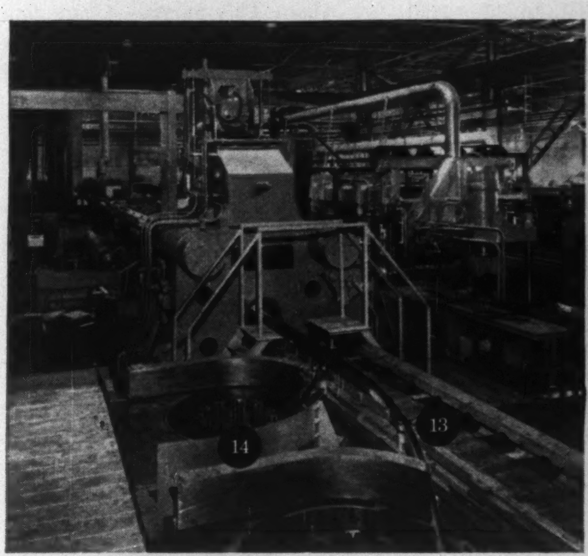
3000-ton-capacity self-contained oil-hydraulic extrusion press

5. Mechanized die-changing device permitting use of several dies in rotation without manual die changing and without interruption in main press cycle
6. Vertical sliding butt saw with oil-hydraulic feed control
7. Movable container holder of one-piece design that will not warp under influence of heat
8. Adjustment that insures concentric alignment
9. Lateral die slide, hydraulically operated, with two stations for die assembly and for removal of butt and shell



3000-ton-capacity water-hydraulic extrusion press with internal piercing device

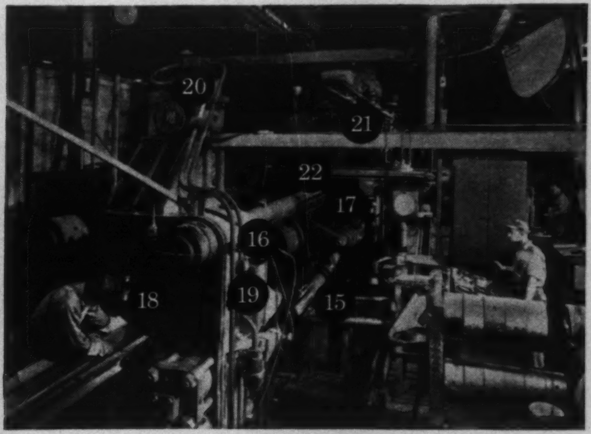
10. Billet loader of robust pivot-arm design
11. Cleanout disc loading device mounted in front of container
12. Base frame—one-piece design of rigid welded construction that facilitates alignment of press assembly



3000-ton-capacity water-hydraulic extrusion press

13. Mechanization of run-out side of press for straight solid and tubular extrusion

14. Double coiler designed for the wire rod to be received near the outlet of the press



2200-ton self-contained oil-hydraulic extrusion press

15. Simple, easily adjustable billet loading device
16. Container holder designed to permit fast change of container, which can be removed on return press stroke
17. Ram speed indicator
18. Large platen hole for ease of access to emerging extrusions
19. Heavy-walled pipes rigidly supported to cut vibrations, leaks
20. Powerful, rigidly constructed shear
21. Large oil reservoir for minimum operating temperature
22. Full-size catwalk for ease of maintenance

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering

Stable Prices Are Predicted

But Fractional-HP Motors May Be Boosted

Integral-horsepower unit sales will be higher; fractionals depend on housing, appliance outlook.

Some makers stress integration of motors with driven machine. New insulations are paying off.

- Prices of integral-horsepower ac motors have been stable and should remain so for this year. Prices of dc motors, which went up last May, should also hold. (An inflationary steel wage settlement would, of course, erase all price predictions.)

A New Concept—You can expect your motor suppliers to stress integration of electric products with driven equipment—rather than just trying to sell motors. Mechanical and electrical engineers will cooperate in designing complete packages of motor and driven machine.

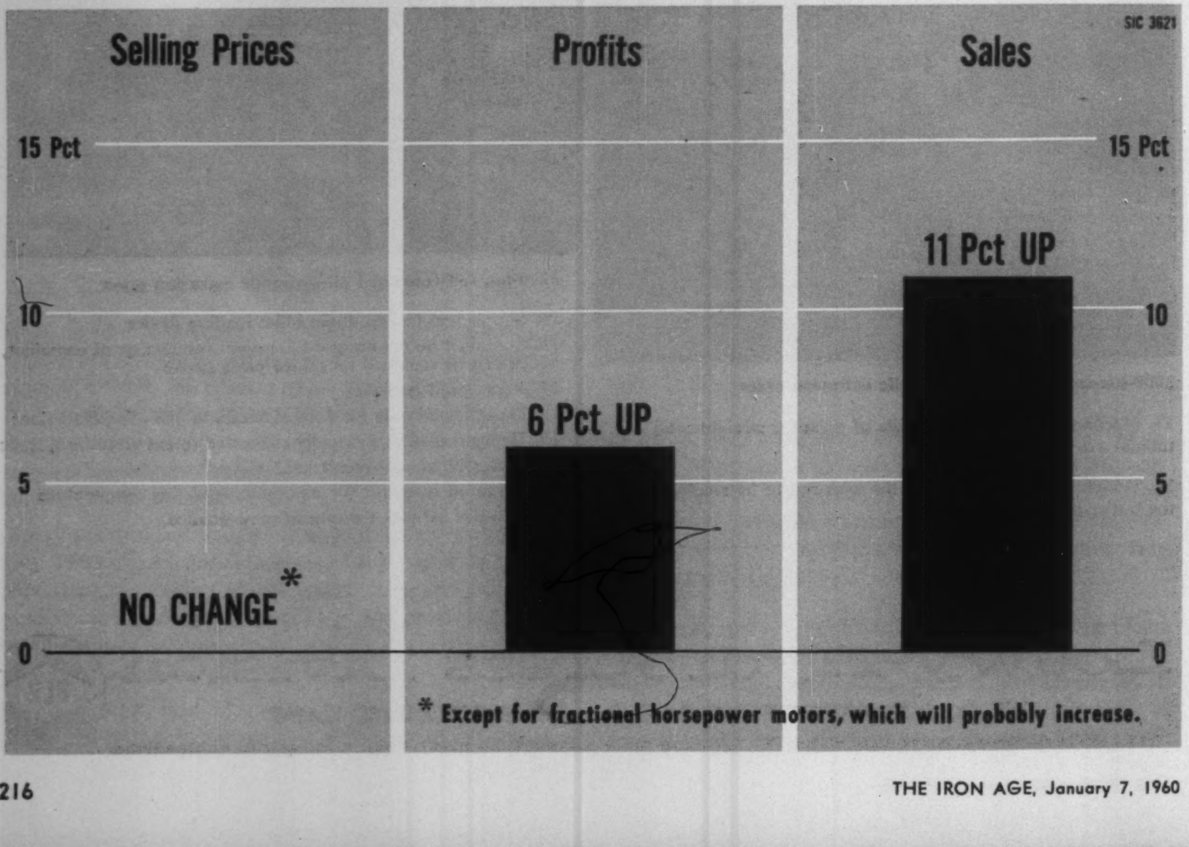
Because they are tied to capital spending, integral - horsepower motor sales are easier to predict. It's estimated that 1959 sales will prove to have been 30 pct ahead of those in '58. A 15 to 20 pct improvement for these motors this year is predicted.

Mill Motors Boom—Steel mill buying boomed dc motors, but sales tapered off in December. This may have been the usual year-end lag, because a lot of horsepower is still being negotiated.

There have been no production cuts because of steel shortages. And there probably will be none because these motor makers were able to build stocks before the strike.

About This Survey—Chart data on these pages are based on replies from companies that employ about

Bright Outlook for Industrial Sales



SIC 3621

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: **HIGHER**

At End of 1959 — Finished Goods: **NO CHANGE**

ORDER BACKLOGS: Average 88 Days **52 Pct UP**

40 pct of all employees in electric motor manufacturing. Because of the varied product lines in the motor field, they are approximations which do not necessarily apply to any single type of motor.

Survey questionnaires were supplemented by personal interviews for the overall industry picture. This technique was used elsewhere in this survey report to refine market and technical forecasts.

New Designs—DC motors rated at from 1 to 200 hp in the General Electric, Reliance, and Westinghouse lines have recently been redesigned. The new motors are more compact power packages.

In ac motors, manufacturers are making wider use of epoxy type insulation for better protection of open motors. Such motors take more abuse and they last longer. The whole insulation field is changing rapidly because user resistance to higher temperatures is fading.

Imports now account for about 2 pct of sales of integral-horsepower ac motors. They create some problems, but foreign motors have not gained general acceptance here.

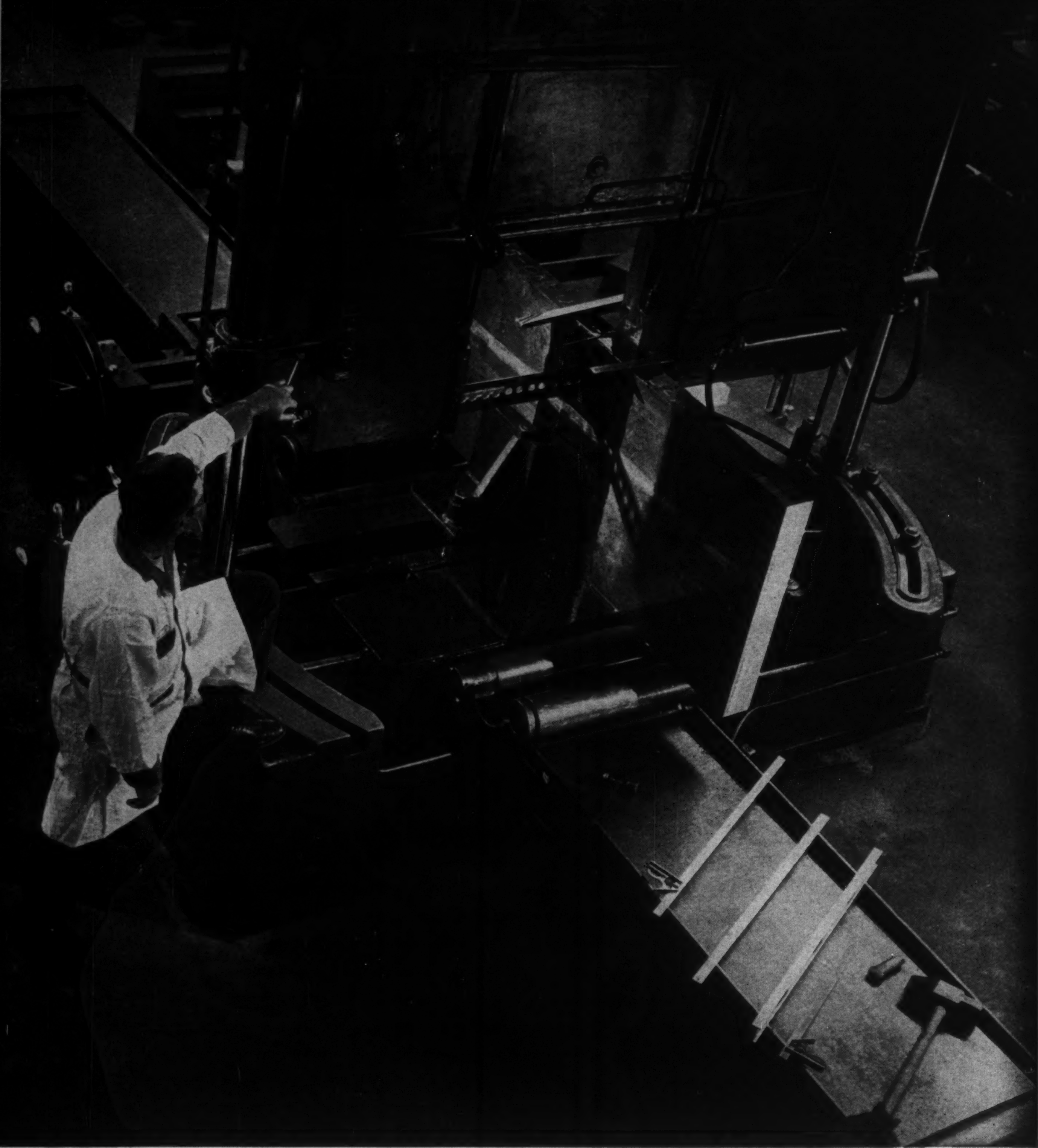
Large Motors Steady—Sales of motors of over 500 hp picked up during the past year and should hold that gain, surveys show. Most respondents said they'd hold the line on prices, though admittedly there has been some scattered price cutting in large motors.

Fractional-HP Motors Climb—Industry executives expect a good first half. Sales began to roll in the spring of 1958 and continued on through 1959. Volume in 1959 may top the 1955 record.

Higher Prices—Prices, which are still at the 1949-1950 level, will probably go up this year. Fractional hp motor manufacturing costs have risen to above the 1949-1950 level.

General Electric Co.

integrated CRUCIBLE steel service



The customer needed plastic mold steel cut to his specs as fast as he could get it. The Crucible warehouse confirmed his order, gave him immediate delivery because it had both the steel and the saw (big 24" x 42" hacksaws which can slice a 40" block in 4-4½ hours).

maintains a variety of local facilities for handling customers' special requirements

"We *regularly* rely on the Crucible warehouse's equipment. Why, it would take us all day to cut steels they can cut in minutes. We've tried to do these cutting jobs ourselves and, frankly, we lose money nearly every time."

This purchasing agent's words are probably typical because countless companies, all over the country, rely on the 31 local Crucible warehouses for handling their special needs. Unusual cutting of specialty steel grades and sizes is just an example. Or, if a warehouse can't handle extras, such as forging, grinding, machining, boring, polishing, etc. itself, it arranges to have them done conveniently and economically outside.

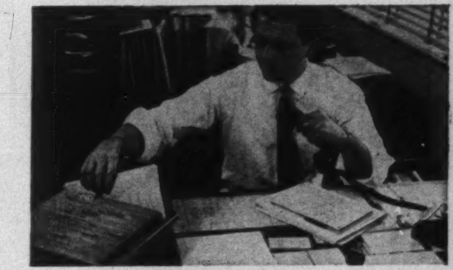
It's entirely possible that your plant has these facilities. Even so, it can pay you to find out what the local Crucible warehouse has to offer. As one materials buyer put it:

"We have a 'get to know the suppliers' policy. I've visited the Crucible warehouse personally and made a list of its equipment. Here it is—under 'Suppliers' Facilities.' Two weeks ago, when all our saws were tied up, we had the Crucible warehouse cut the steels. They did it immediately, so my list paid off."

All Crucible warehouses maintain stocks, services and facilities to serve you. If you'd like to know more about them, phone or visit the warehouse nearest you—*any time.* Its facilities and services are part of Crucible's integrated operation, from ore to mill and warehouse delivery to you. *Crucible Steel Company of America, Dept. PA06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

STOCK LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.



Customers' Master Files quickly give Inside Account Salesmen details on your receiving schedules and special requirements.

Inside Account Salesmen keep reference sources handy — give you fast breakdowns of analyses, or heat-treating, machining data.

Fleet of trucks and special delivery vehicles maintained at each warehouse ensure prompt, nearby deliveries.

One Source For All These Steels

TOOL STEELS—Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS—Crucible's famous "Rex"® steels: Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEEL — Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS — Crucible Max-el® rounds, hexagons, plates and brake die steel

ALLOY STEELS — bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS — Hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS

HOLLOW TOOL STEEL

WELDING AND HARD FACING ROD

PLASTIC MOLD STEELS

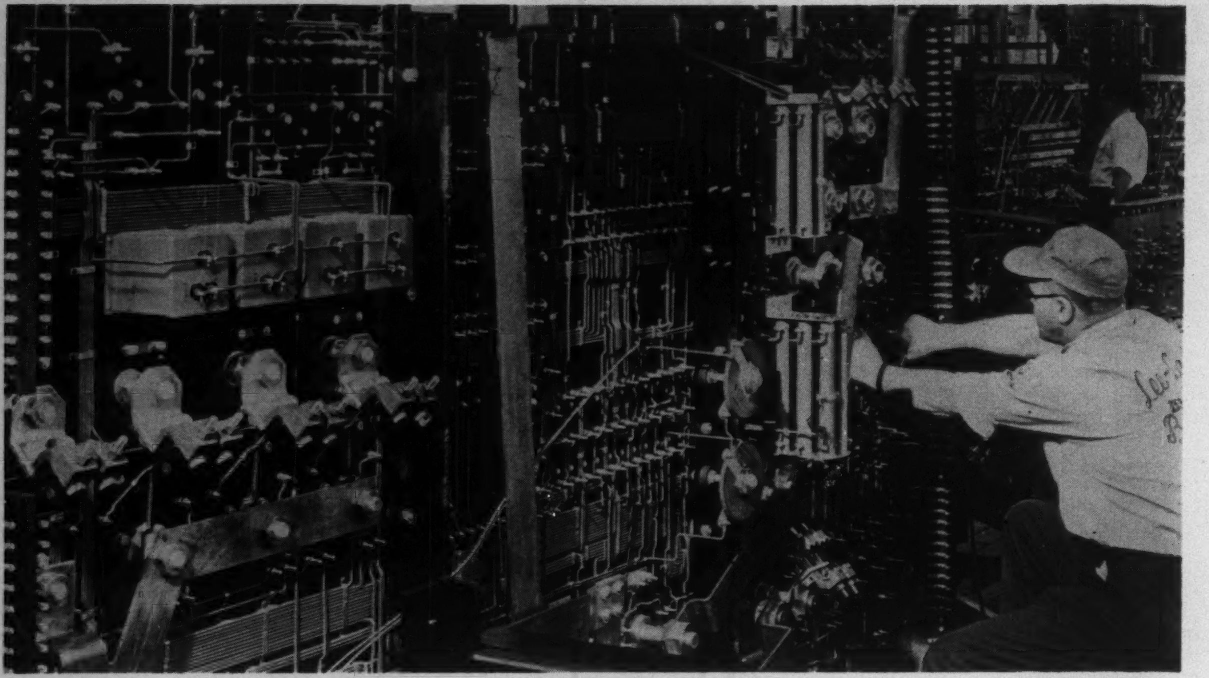
PERMANENT MAGNETS

—and many others

Full stocks of specialty steels enable warehousemen to ready your order for shipment overnight — or earlier.

CRUCIBLE STEEL COMPANY OF AMERICA

Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Columbus • Dallas • Dayton Denver • Detroit • Grand Rapids • Harrison • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee • New Haven • New York Philadelphia • Pittsburgh • Portland, Ore. • Providence • Rockford • Salt Lake City • San Francisco • Seattle • Springfield, Mass. • St. Louis St. Paul • Syracuse • Tampa • Toledo • Tulsa • Toronto, Ont.



Torkel Korling Photo

Survey Report 1960 | **Electrical Industrial Controls**

Sales Pickup Ahead for Controls

New Products Are Due, But Competition Will Be Stiff

More control units will feature transistors in place of electro-magnets.

They'll help boost sales and profits, controlmakers say—when the steel issue is settled.

▪ Makers of electrical and electronic industrial controls are girding for a year of tough competition.

The industry is comparatively young and the market for controls is expanding at a rapid pace. But competition has grown right along with the expansion of markets. And more recently, foreign components have made their appearance, further stiffening the competitive elements of the business.

Buyers to Benefit—For the buyer of controls, the competition has its advantages. Competition is always good for the buyer. It leads to improvements in existing products. And it acts as a spur to the development of new and better controls.

Some 88 pct of the manufacturers replying to the survey indicate they will bring out at least one new product this year.

Trend to Transistors—For this reason, many manufacturers believe there is an accelerated tendency toward electronic or "static" controls and away from electro-magnetic devices. Use of transistor and diodes in place of electro-magnets is also seen as improving performance by improving reliability under frequent operation for long periods.

Naturally, not all manufacturers look favorably on this trend. Producers of electro-magnetic components view it dimly. And they are also receiving added competition from foreign manufacturers.

Prospects and Problems—Nonetheless, industrial controls manufacturers are looking for a 10 pct increase in sales in the coming year. At the same time, they forecast a corresponding 10 pct increase in profits. And they look for only a 1 pct increase in prices.

By the end of 1959, backlogs had stretched out to 90 days, a 22 pct increase over the 74 days on the books at the end of 1958.

But in assessing the outlook for the coming year, the controls industry shows a preoccupation with problems arising from the steel strike.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Technical: Increased use of transistors and diodes in place of electro-magnets.

"Marketing problem: Rise of foreign imports. We believe that both of these will have a deleterious effect on our share of the components market." F. F. Rowell, Vice President, **Guardian Electric Mfg. Co.,** Chicago.

SIC 3622

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: **HIGHER**

At End of 1959

Finished Goods: **HIGHER**

ORDER BACKLOGS: Average 90 Days **22 Pct UP**

"Capital investment plans of the steel industry after taking into account the strike loss." W. Peter, Jr., Vice President, **Electric Controller & Mfg. Co.,** Cleveland.

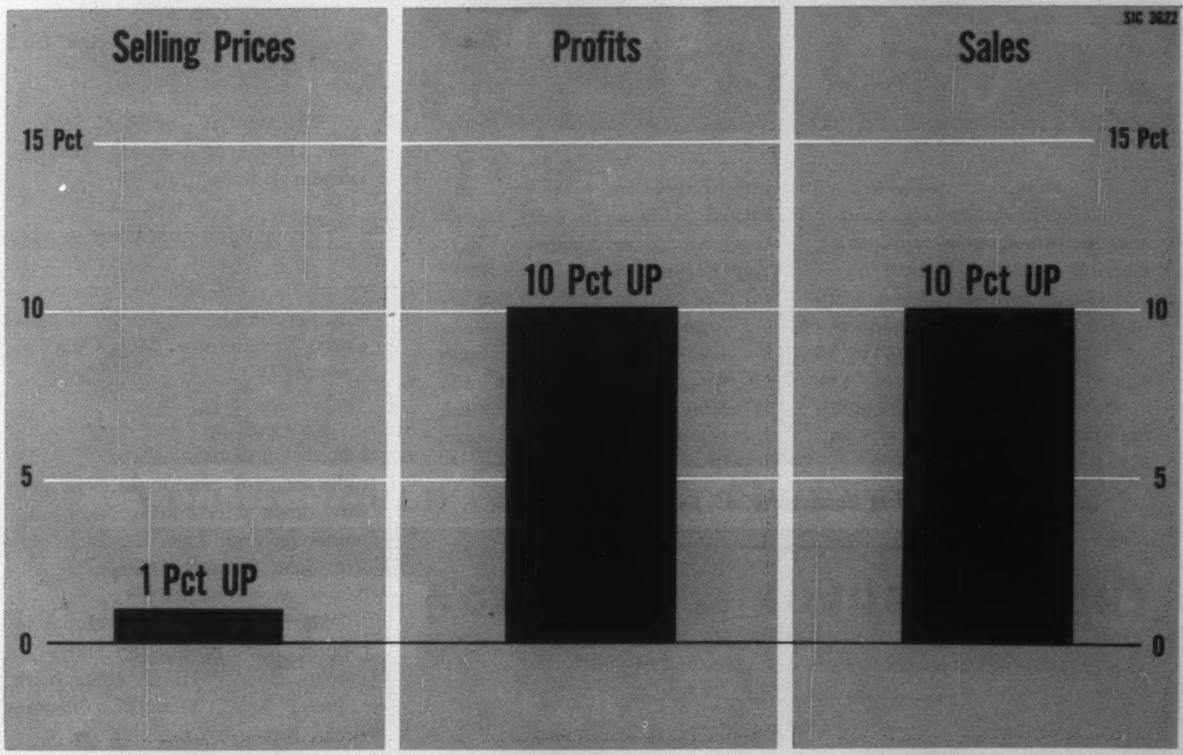
"Availability of steel; credit; mortgage money." J. Manning, Plant Manager, **Cutler - Hammer, Inc.,** Lincoln, Ill. plant.

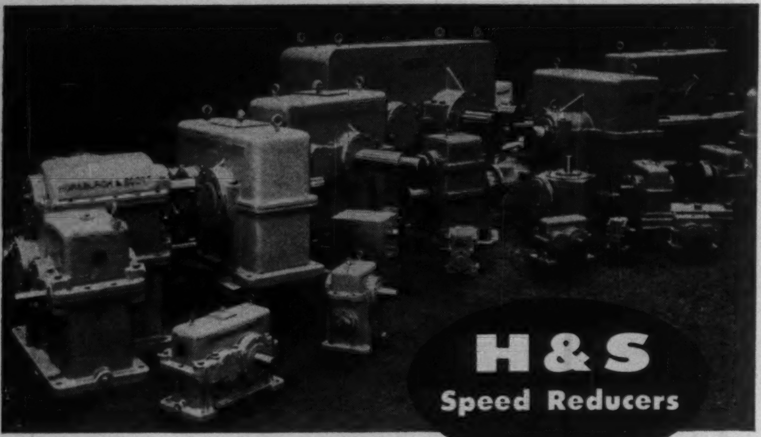
"Improvement in availability, life, reliability, wattage, and price of transistors." T. Hopf, General Manager, **Dynamatic Corp.,** Kenosha, Wis.

"Lack of Engineering and Technical help." W. S. Rekne, Assistant Treasurer, **Vickers Electric Div.,** St. Louis.

Continued

A Good Way to Start the Year





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Controls, continued

"Our biggest problem is finding the man who buys or specifies electrical industrial controls for his plant. We are going to try hard to find how to get our message to him." J. Saint-Amour, President, **Assembly Products, Inc.** Chesterland, Ohio.

"We anticipate greater competition." R. M. Brumfield, President, **Potter & Brumfield,** Franklin, Ky.

"In general, the technical emphasis will be on better performance and smaller size. The better performance is related to reliability under frequent operation over long periods. Miniaturization is the order of the day in all electrical equipment because of the size problem introduced by more electrical equipment required for each installation.

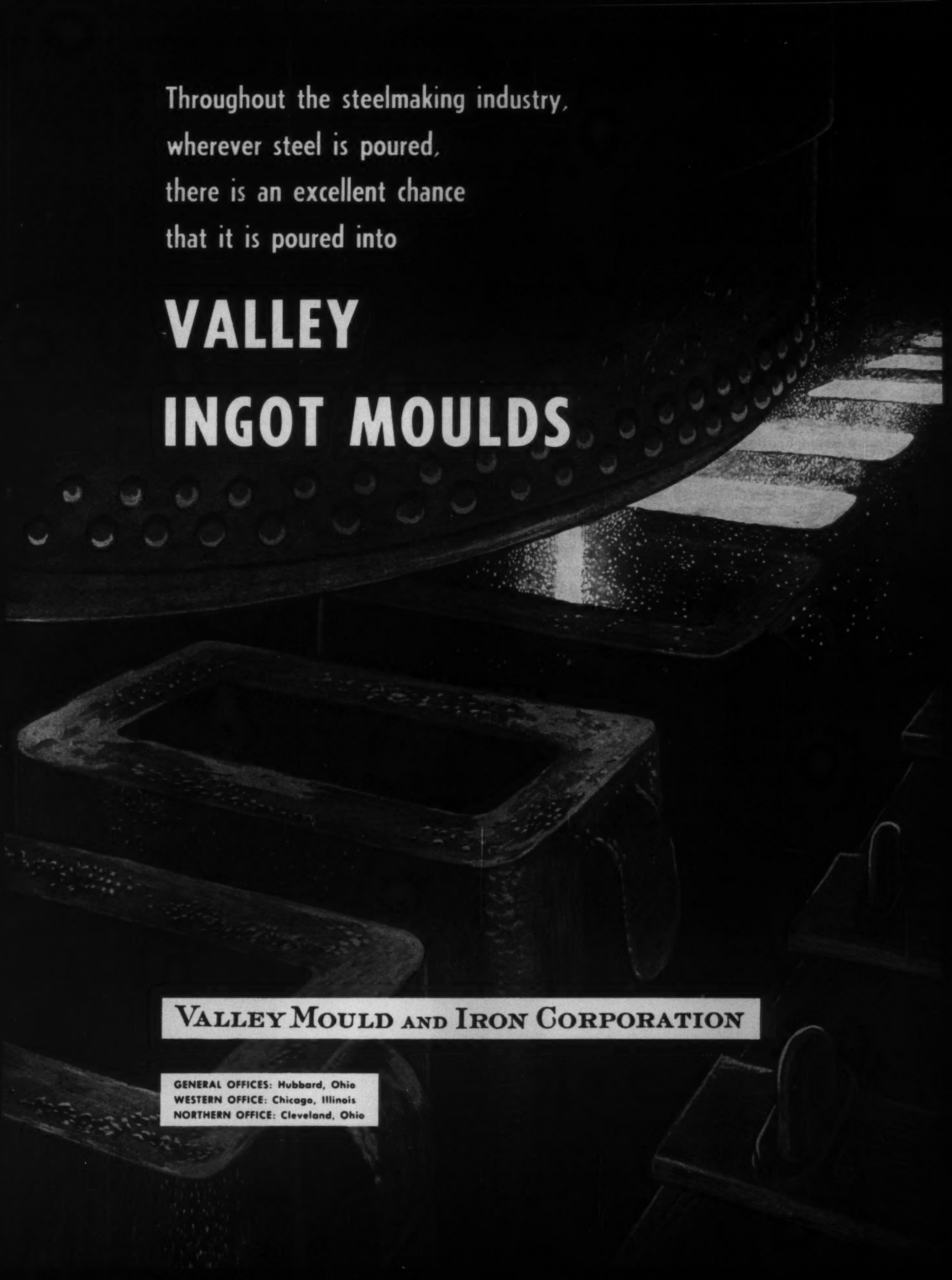
"More significant will be the accelerated trend toward electronic (static) and away from electromagnetic devices for the more complicated types of control installations." F. H. Roby, Executive Vice President, **Federal Pacific Electric Co.,** Newark, N. J.

"Settlement of the Steel Strike." A. F. Dormeyer, General Manager, **Dormeyer Industries,** Chicago.

"Giving a customer value in what they buy, when compared with values they can receive from countries outside U. S. A." H. C. Curtis, **Curtis Development Mfg. Co.,** Milwaukee, Wis.

"New method of application and fabrication of new alloyed steel that older control cannot do, will help slow down price cutting due to stiff competitive selling." C. Schamanek, President, **Robotron Corp.,** Detroit.

"Shortening the development, tooling and production time on new products." H. H. Rosenheim, General Sales Manager, **International Register Co.,** Chicago.


Throughout the steelmaking industry,
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there is an excellent chance
that it is poured into
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GENERAL OFFICES: Hubbard, Ohio
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'60, A Good Year for Fasteners

But Threats From Imports Continues

The fastener industry looks for a good year in 1960. Profits and sales are expected to climb.

However, foreign competition and loss of aircraft work will cause some headaches.

- Profits, sales and prices all are expected to rise in the fastener industry during 1960.

According to estimates, profits should rise 9 pct over 1959. At the same time sales are expected to climb 7 pct and prices 3 pct.

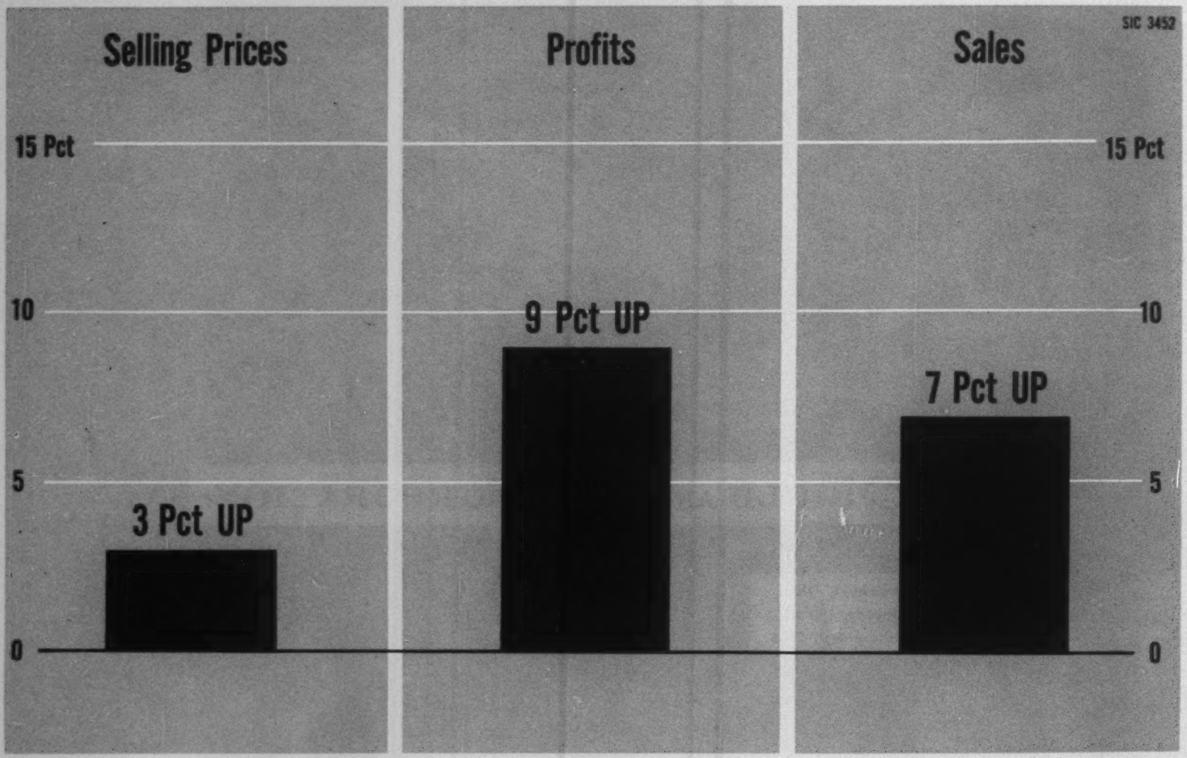
Good Year Ahead—For the industry, 1960 looks to be a good year. However, fastener makers will be keeping a sharp eye on foreign imports. Many feel this will affect business more than other factors this year. Last year, imported nuts, bolts and screws, selling cheaper than those manufactured domestically, seriously affected the industry's sales volume.

Manufacturers say that if the third quarter 1959 import level continues into this year, even without an increase, it will cause serious marketing problems.

More Problems—Others feel increased production of industrial adhesives may also cause marketing problems, especially in the threaded lines. Of some concern to the industry is the availability of materials because of the long steel strike. Some makers feel this will definitely hurt production during the early months, at least.

Another problem facing the industry is the transition by the government from manned aircraft to missiles. Since a great part of fastener sales go into these categories, companies will be losing much of

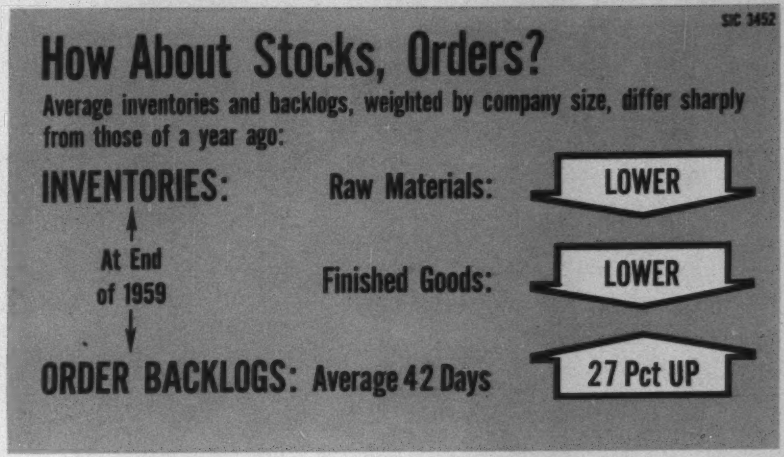
Better Sales and Profits Ahead



their aircraft business. They will have to meet new standards and get into the scramble for contracts.

Extended Delivery Dates—There should be a more concentrated effort on the part of manufacturers to build better distribution systems, according to some industry sentiment. Many feel that by doing this and maintaining better relations with dealers, sales can be increased even more.

The IRON AGE survey covers companies employing 44.5 of all production workers in the industry. Backlogs were up 27 pct at the end of the year over 1958. Backlogs are now approximately 42 days in comparison to 33 days a year ago. Of all the companies answering the survey, 43 pct will introduce new products this year.



SIC 3452

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"The design and development of new fasteners." P. A. Miller, General Manager, **Reliance Div., Eaton Mfg. Co.,** Massillon, Ohio.

"This year consumers of industrial products will attach a growing importance to the reliability factors of their suppliers. By 'reliability' I mean absolute dependability on (a) meeting delivery dates; (b) having all of the goods supplied meet specifications for size, finish, uniformity and other mechanical and physical characteristics; and (c) a realization that an end assembly is no better than the parts of which it is made. With a rising tempo of general business, the costs of dealing with the lowest prices, lowest quality supplier will be higher than when dealing with first line organizations." H. T. Hallowell, Jr., President, **Standard Pressed Steel Co.,** Jenkintown, Pa.

"The continued penetration of foreign product in our industry has and will remain the biggest problem in the marketing of our products. The shifting of sources on price alone has kept our marketing policies up in the air." D. O. Bielenberg, **Pheoll Mfg Co.,** Chicago.

"Rapidly increasing volume of imported bolts and nuts at selling prices below our cost." M. A. Chambers, President, **National Machine Products Co.,** Utica, Mich.

"The most serious marketing problem we face in our company, and in our industry, is the ever-increasing shipments of imports of bolts, nuts, rivets, and machine screws (excluding wood screws) into this country. If the imports continue at the estimated third quarter 1959 rate, they would amount to approximately 120,000,000# per year. This is more than double the 1958 tonnage, almost four times the 1954 tonnage, and 30 times the 1951 tonnage. Even though current prices in our industry are about 6 pct below last year, imports are selling at 20 pct to 30 pct below our market. It is impossible to reduce our costs enough to meet this competition, and with the advent of the St. Lawrence Seaway, I expect an ever-increasing flood of imported products." W. E. Ward, President, **Russell, Burdsall & Ward Bolt & Nut Co.,** Port Chester, N. Y.

"A tight material situation in the early months of 1960." R. E. Casner, Vice President, **Townsend Co.,** New Brighton, Pa.

"Foreign Imports." R. H. Campbell, President, **Camcar Products Co.,** Chicago.

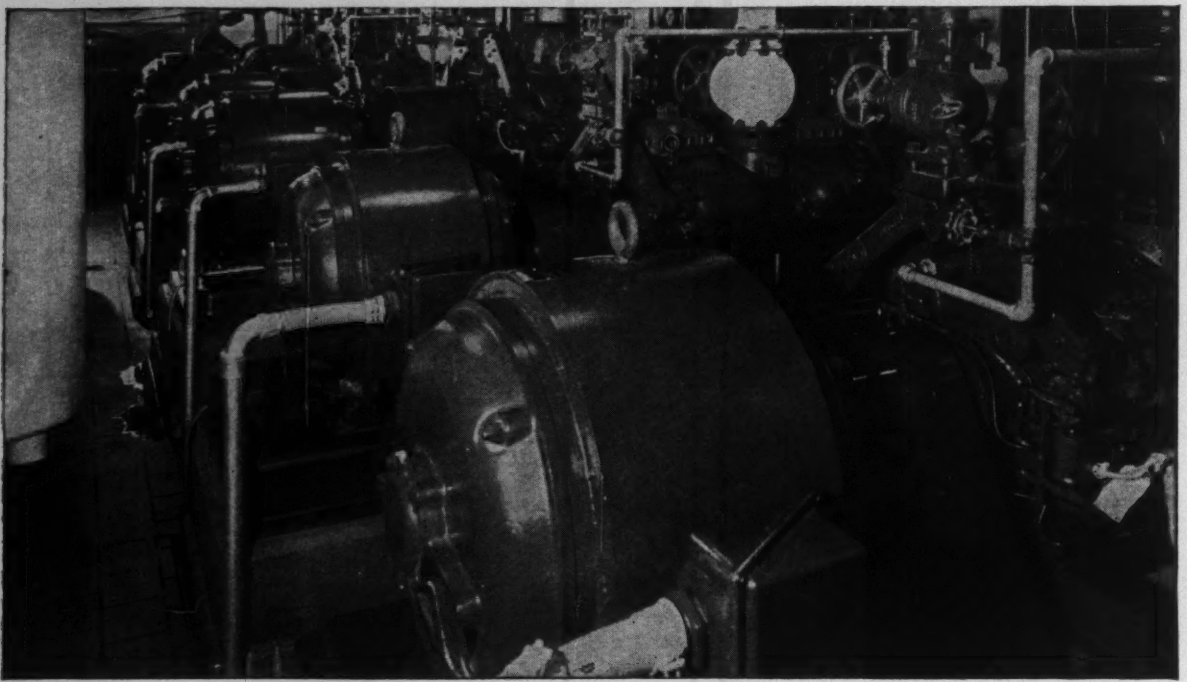
"The simplification of pricing methods and product identification should result in better and more intelligent merchandising. Otherwise, I believe our industry will be confronted with many of the same problems we have had for the past several years." M. H. Gordon, President, **Sterling Bolt Co.,** Chicago.

"Imports and lack of raw material." W. T. Ylvisaker, President, **Parker-Kalon Div., General American Transportation Corp.,** Clifton, N. J.

"Further acceptance of our counter-bore screw for machine tools, jigs and dies." D. Spicer, Vice Pres-

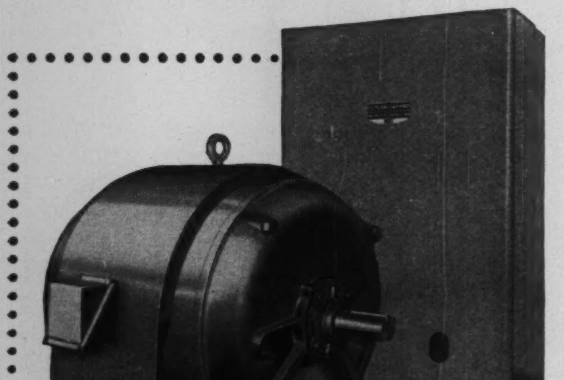
Continued on P. 229

WAGNER ELECTRIC MOTORS . . . THE CHOICE OF LEADERS IN INDUSTRY



End Voltage Drop and Line Disturbance Problems caused by starting BIG MOTORS . . .

Use Wagner Increment Motor-Starter Combinations



Type RP polyphase motor in ratings to 500 hp with increment type starter.

Increment starting is the easy, inexpensive way to limit the inrush of starting current in motors up to 500 horsepower. And, you do it *best* with Wagner Increment Motor-Starter Combinations . . . matched polyphase motors and magnetic increment starters.

They do the job efficiently by reducing current drawn from the line on each point of the starter. Line disturbances are reduced because current taken from the line is not broken during the starting period. Motors start sure and fast . . . reach full speed in a matter of seconds. They do the job economically, too, because Wagner combinations cost less than motors with primary resistance or auto-transformer type starters. Two more plusses: The compact, relatively lightweight starter is easy to connect, and maintenance is minimized. The motor requires only regular inspection, cleaning, and lubrication . . . the starter needs very little attention.

Wagner two-step motor and starter combinations are suitable for most applications. For installations where unusually low inrush of starting current is required, 3, 4, 5, or 6-step increment motor-starter combinations are available. All combinations fully meet the polyphase motor starting requirements of AEIC-EEI-NEMA. Their dependability and efficiency—their ability to get the job done —has been proved by more than 20 years of service in the field.

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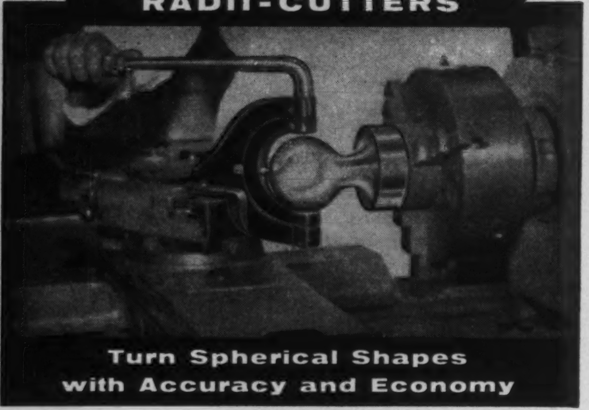
RADII-CUTTERS



...also for turning Glass Laps and Contact Lenses

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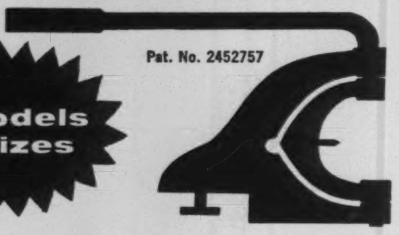
3 Sizes**



Models 3-S and 3-D (for small lathes)
Ball and socket shapes from 0" to 3" radius, sockets to depth equal to radius. By reversing yoke, sockets to 8" radius may be turned to depth of the radius minus 17/32" for "boss line" of cutter.

Model 3-S (Standard)	Model 3-D (Deluxe)
$160.00 f.o.b. Los Angeles	$231.10 f.o.b. Los Angeles

Models 4-S and 4-D (for medium lathes)
Ball and socket shapes from 0" to 4" radius, sockets to depth equal to radius. By reversing yoke, sockets to 12" radius with depth of radius minus 17/32".

Model 4-S (Standard)	Model 4-D (Deluxe)
$180.00 f.o.b. Los Angeles	$274.20 f.o.b. Los Angeles

Model 8-D (for medium and large lathes)
Ball and socket shapes from 0" to 8" radius, sockets to depth equal to radius. By reversing yoke, sockets to 20" radius with depth of radius minus 17/32".

Model 8-D (available in Deluxe only)
$491.20 f.o.b. Los Angeles

Standard model **Radii-Cutters** come in fitted hardwood carrying case with three ½" or ⅝" diameter carbide tool bits, tie down plate, Allen wrenches and instructions.

DeLuxe models have in addition such features and accessories as dial calibrated in degrees for maximum accuracy and saving of time on repeat cuts; straight spindle yokes for cutting form rollers, pipe bending dies, etc., and tool bits and wrenches for those accessories.

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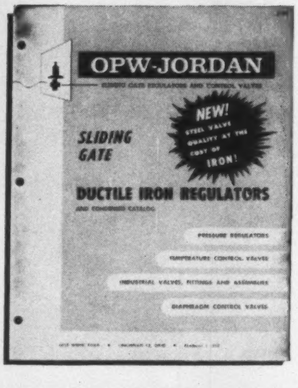
NOW AVAILABLE
IN DUCTILE IRON**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This easy to use manual describes how you can get steel strength in regulators and control valves at the cost of iron . . . and, at considerable savings. It fully explains how ductile iron is produced, shows features, specifications, typical ranges of mechanical properties, and comparison tables on physical properties of cast steel, ductile iron, red brass and cast iron. This manual is also a condensed catalog describing the complete line of OPW-JORDAN products that are available to you in ductile iron. It's available for the asking . . . so, send for your Ductile Iron Manual today!

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ident, **Ferry Cap & Screw Co.,** Cleveland.

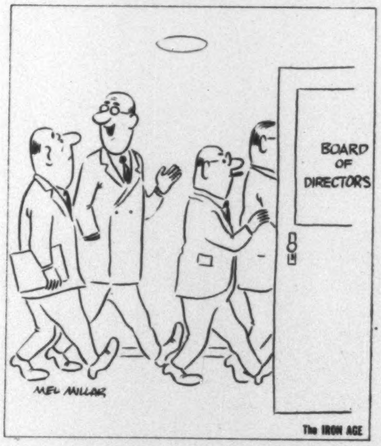
"Improvement in riveting techniques." V. L. Bradford, President, **Milford Rivet Machine Corp.,** Milford, Conn.

"Change over to hexagonal bolts and hexagonal nuts—foreign competition." H. E. Smith, Vice President, **Vulcan Rivet & Bolt Corp.,** Birmingham, Ala.

"Foreign import and higher steel costs." O. G. Lobatz, Vice President, **Revere Screw & Rivet Corp.,** Chicago, Ill.

"The development of, and marketing of subminiature and microminiature fasteners required by missle and electronic manufacturers." R. F. Gibney, General Manager, **Rosan, Inc.,** Newport Beach, Calif.

"The impact of foreign imports will make the sale of higher priced home-produced goods progressively more difficult. This will be a growing problem which will become one of major importance to all American industry in a few years." J. Norman, President, **Automatic Screw Machine Products Co.,** Chicago.



"If I can't think of anything to say at these meetings, I just make a speech."

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If slow-downs in assembly operations are jinxing your production schedules, you can be sure they aren't caused by "voodoo"! But what about the fasteners you are using? If they are not accurate and uniform, they can cause costly bottlenecks.

Fischer helps solve fastening problems by supplying *precision turned brass and aluminum nuts* . . . standards, specials, odd sizes or shapes and miniatures . . . to meet individual needs. And to assure reliable performance, all Fischer turned nuts are produced to closer tolerances than required by American Standard B18.2-1955 specifications. Fischer also specializes in dependable "on schedule" deliveries and competitive pricing. *That's why FISCHER is your best source for precision nuts.*

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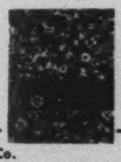


Gray Iron Founders' Business Up

Technical Progress Aids Pickup

During 1959 gray iron founders were on the road to recovery from the recession.

This year should see even more improvement with increased sales and profits throughout the industry.

▪ If estimates hold true, gray iron founders will have a second good year following the 1958 recession. Sales and profits are expected to increase and there is no danger of low inventories of raw materials hurting production.

Sales increase during 1960 is expected to be about 9 pct. Profits should rise about 4 pct. Price increases will be slight, about 3 pct.

More Ductile Iron—One factor cited by many founders in the optimistic outlook will be greater uses of ductile iron. This will aid in competition with steel and malleable castings producers.

During the past year, many advances were made in technological areas. This, too, will mean greater and more efficient production this year. Metallurgical progress has led to a continuance of advancement in the physical and mechanical properties of cast iron. Progress will be more evident in 1960.

Some Worries—Some headaches during the year: Competition, both domestic and foreign; costs; labor; and price stabilization are all cited.

Gray iron founders will try to keep as much business as possible away from aluminum and other metals. The greater use of aluminum in replacing iron castings has already caused great concern in the industry and will continue to do so. Threat of imports is great and foundrymen will work to combat it.

Cooperation Wanted — Along labor lines, gray iron founders want unions to cooperate in increas-

Gray Iron Foundries Society Inc.

ing and maintaining efficiency in production. Rising costs, always a problem in the industry, may be combatted with the introduction of modern, cost-cutting equipment.

Many founders fear that reduced housing construction will cause setbacks in sales.

Promotion Will Help — The 1959-60 organization of a national promotion program of gray iron by the Gray Iron Founders Society is expected by some to help acquaint more users with the merits of their products and lead to greater sales.

SIC 3321

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: **HIGHER**

At End of 1959

ORDER BACKLOGS: Average 34 Days **10 Pct UP**

What Industry Executives say:

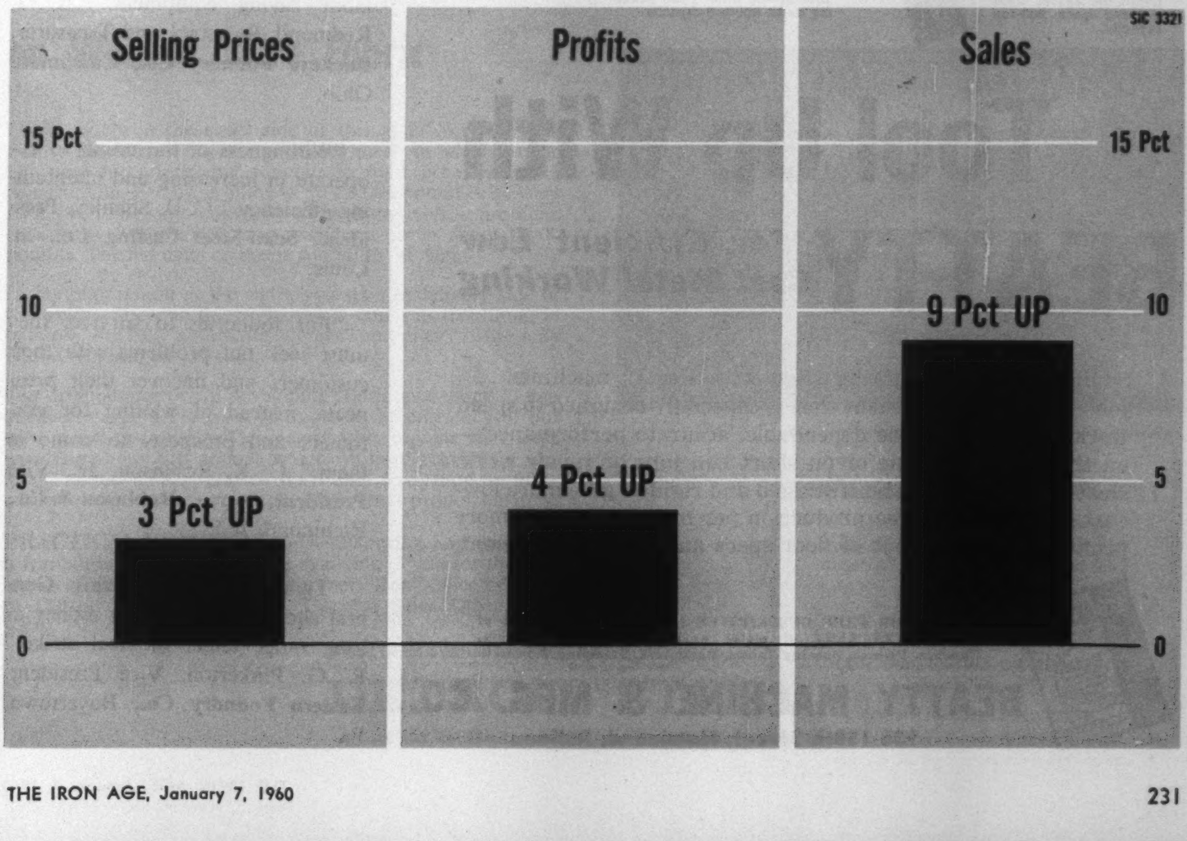
Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

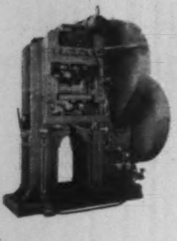
"In this industry, remarkable progress has been made in the metallurgical field. Continuance of that advancement in the physical and mechanical properties of cast iron can be assured. Progress can also be expected in foundry techniques looking toward production of castings to more precise dimensions and with better surface finishes. Product reliability will also be better." P. E. Rentschler, President, Hamilton Foundry, Inc., Hamilton, O.

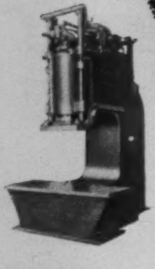
"Stabilizing prices." K. Pottinger, Sales Manager, Component Prod-

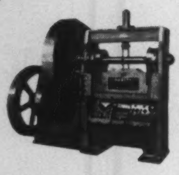
Continued

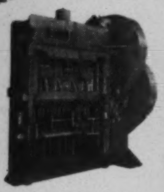
Grounds for Moderate Increase

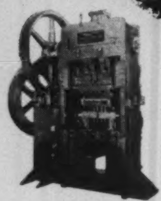












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For forming, bending, flanging, pressing. 250-ton capacity.

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GUILLOTINE BEAM FLANGE PUNCH
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ucts Dept., **Westinghouse Electric Corp.,** East Pittsburgh.

"Increased production of ductile iron to replace other materials, particularly ingot molds." William Love, President and Treasurer, **Colonial Foundry Co.,** Louisville, O.

"The technical developments that will effect the industry are Co2 and shell molding, producing close tolerance castings. The problem will be getting castings within tolerance the engineers are looking for." T. Miller, President, **Great Lakes Foundry & Machine Corp.,** Ludington, Mich.

"Ductile iron should replace a lot of steel." G. A. Kramer, Vice President, **Advance Foundry Co.,** Dayton.

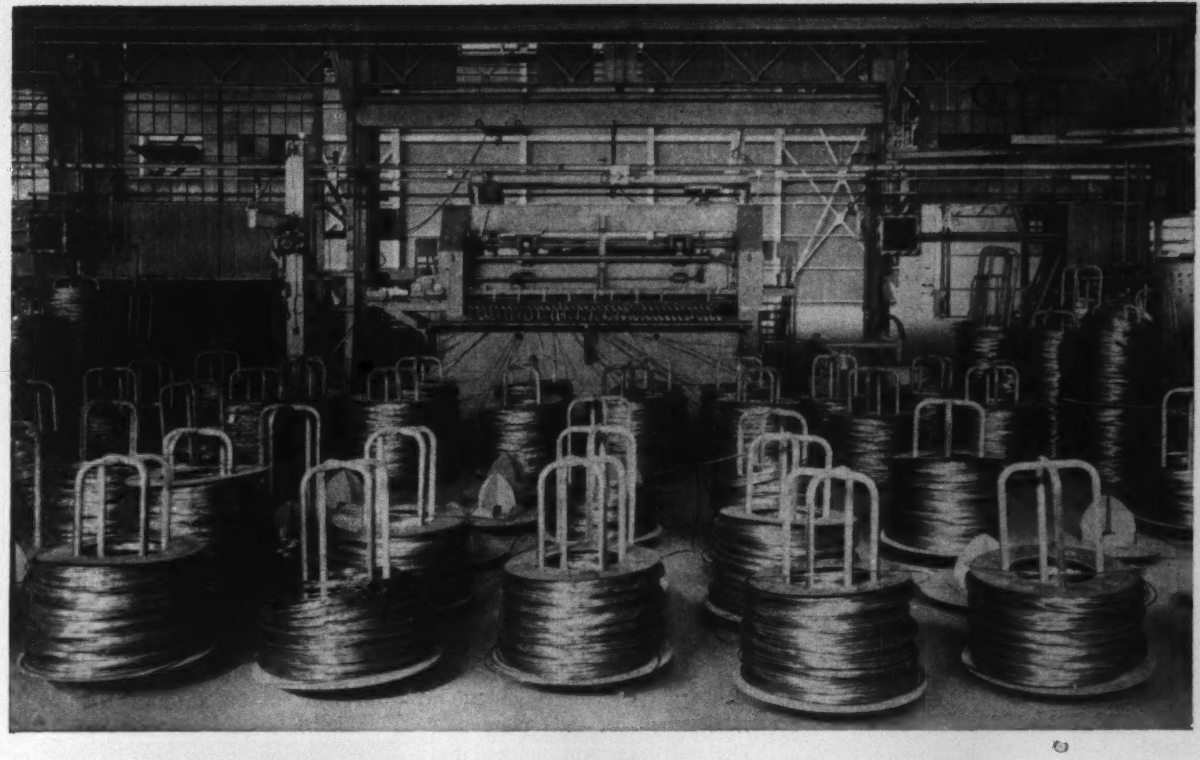
"Exploiting ductile iron." C. I. Capp, President, **C. I. Capps Co.,** Jacksonville, Fla.

"The demand for more modern labor-saving equipment." R. J. Redmond, Secretary and Treasurer, **Buckeye Foundry Co.,** Cincinnati, Ohio.

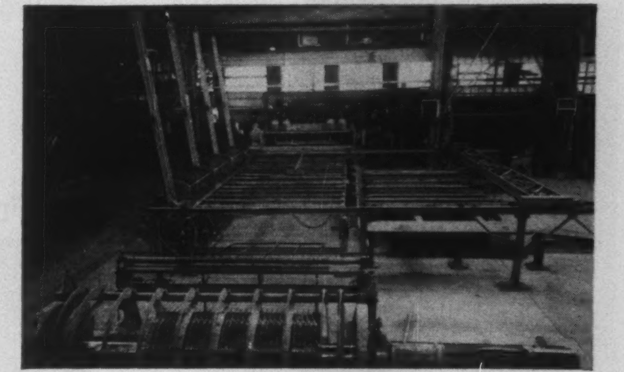
"Willingness of the union to cooperate in increasing and maintaining efficiency." C. B. Shanley, President, **Semi-Steel Casting Co.,** St. Louis.

"For foundries to survive, they must seek out problems with their customers and uncover their prospects, instead of waiting for customers and prospects to come to them." C. K. Robinson, Jr., Vice President, **Swayne Robinson & Co.,** Richmond, Ind.

"Tight money on housing. General shortage of spending money as long range effect of steel strike." R. G. Pinkerton, Vice President, **Eastern Foundry Co.,** Boyertown, Pa.



Let DSC LPR COILS help cut your brite wire fabricating costs as they have done for our Portsmouth Division on Welded Wire Fabric



Look closely at the entry side of this giant Welded Wire Fabric machine. This one produces mesh in widths up to 13′, used for reinforcing concrete in road, pipe and other construction. Fed by as many as 80 - 3,000 pound Brite Wire LPR's running simultaneously off as many reels, it produces rolls from 300′ to 500′ long, weighing up to about 6,000 pounds. The flat mats or sheets run up to 30′ long.

In the photograph at the right, you see the delivery side of the welder, shear in the background, coiler in front and, in between, the fully automatic "flipper" and piler . . . the only one of its kind, we are told.

Our original purpose in developing continuous-length, long-production-run LPR's was to improve the efficiency of our own mesh operations. Compared with regular mill coils weighing about 300 pounds which we used previously, our 3,000 pound LPR's reduced downtime frequency by 90% and attendant coil-change and other costs proportionately.

PRACTICAL POINTERS on wireworking and complete information on DSC LPR's are available to you for the asking—call your nearest DSC Customer "Rep" office or write to Detroit Steel Corporation, General Sales Office. Box 4308, Detroit 9, Michigan.

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.023″/.071″ inc. (to about 1000 lbs.)

HIGH CARBON
.072″/.250″ inc. (up to about 4200 lbs.)
.023″/.071″ inc. (up to about 1000 lbs.)

COIL DIMENSIONS ON REQUEST

CUSTOMER "REP" OFFICES IN PRINCIPAL CITIES

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Backlogs Are 33 Pct Higher

Equipment Builders Predict a Good Year

Despite phenomenal gain in '59, industry leaders see a 12 pct sales increase this year.

Expect to hold price rise to average of 2 pct. Steel shortage will not affect deliveries.

▪ Builders of industrial heating equipment will begin this year with backlogs a third higher than they were a year ago. They expect to do about 12 pct more business than they did in 1959, with prices averaging about 2 pct above current levels.

These are the opinions of the top executives in companies that employ more than 60 pct of the production workers in the heat treating equipment field. It suggests that '60 will be a very good year, with deliveries becoming slightly extended.

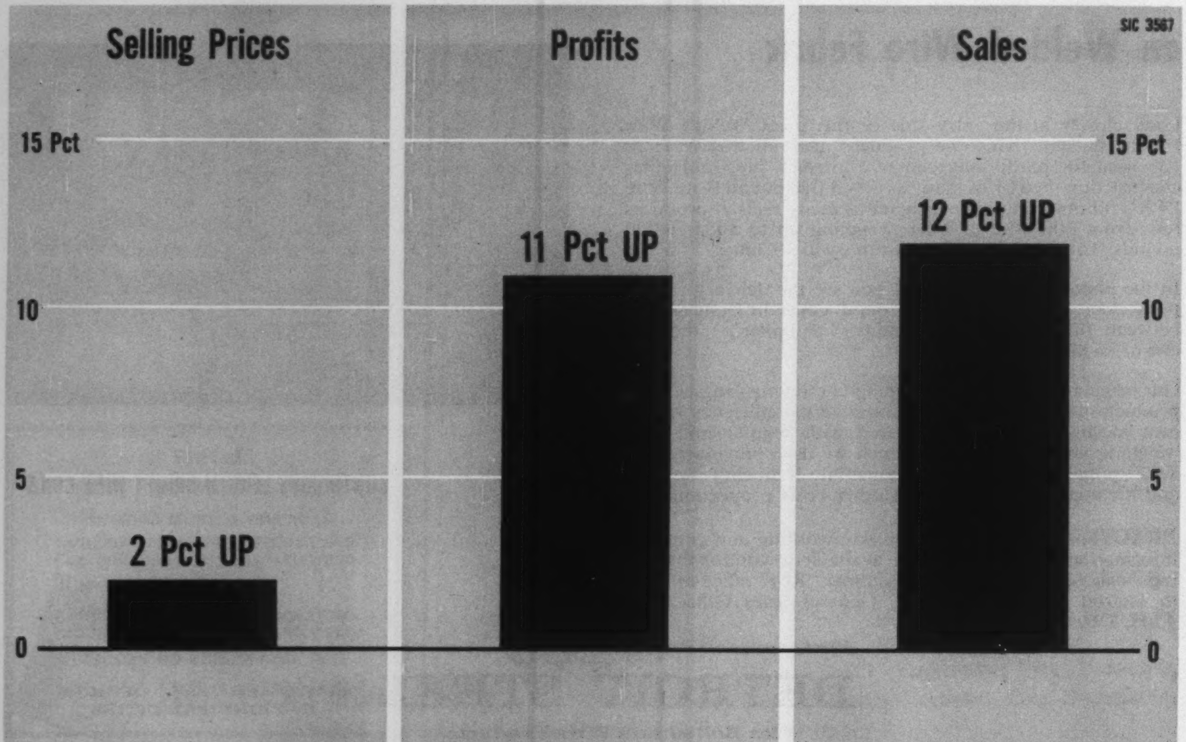
Orders are up—For the first 10 months of 1959, furnace and heating equipment orders soared some 129 pct above the comparable '58 period. In induction heating units, the gain was 139 pct. Shipments were not quite comparable because of delivery problems on many big units destined for steel plants.

The past year was marked by a record number of corporate changes: Mergers or acquisitions involved Hevi Duty Electric, Surface Combustion, and Swindell Dressler, each with outside firms. And Ajax Magnethermic Corp. was formed early in the year as a result of a merger.

No Shortages—With raw material inventories averaging about as they were a year ago, no shortages are expected.

Backlog data, unlike that on sales, prices and profits, is weighted. Weights are based on plant employment in respondent companies vs. employment in the heat treating industry as a whole.

Price Increases Will Be Slight



New Designs Coming—Two out of three manufacturers in this field will introduce at least one new product this year. The trend is to more specialized equipment that can be integrated with production.

There will be an increase in vacuum furnaces to anneal stainless steel, titanium and zirconium—plus wider use of vacuum on more conventional work.

Oxygen Booms—In the melting field, the volume leader will be new oxygen steelmaking vessels. Biggest vessels today make about 100 tons per heat; new ones may produce 200 to 300 tons. Capacity, which started '59 at 4 million tons, should be at least 9 million tons by the end of the year.

In specialties, there'll be a boom in vacuum melting of the refractory metals.

SIC 3567

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: HIGHER

At End of 1959 Finished Goods: HIGHER

ORDER BACKLOGS: Average 104 Days 33 Pct UP

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Continuous annealing—in vacuum—of stainless steel, zirconium and titanium. Also of copper strip from compacted copper powder." K. U. Wirtz, President, **Electric Furnace Co.,** Salem, Ohio.

"Improvements in all lines of product—in particular 'Power convection' as applied to furnaces." H. M. Heyn, President, **Surface Combustion Corp.,** Toledo.

"Demand is moving from the orthodox equipment to highly specialized, highly technical equipment. Our problem is to expand our technical staff to be able to properly service inquiries from new, highly technical industries." C. H. Stevenson, Vice President, **Lindberg Engineering Co.,** Chicago.

"High labor costs are again forcing the manufacturing industries to take further look at labor saving devices. This will of course give induction heating in the heat treat and forming field, and induction melting in the pressure casting field a further boost in 1960." J. A. Logan, President & Treasurer, **Ajax Magnethermic Corp.,** Youngstown.

"The biggest marketing problem ahead is the lack of young ambitious imaginative salesmen who are not afraid to work in the field more than 8 hours a day. Too many salesmen are afflicted with swivel-chair-itis.

"But the greatest lack is inability or unwillingness to sit down with a customer and work out the proper equipment for the job. This takes a lot of experience, know how, knowledge of one's product and imagination combined with a lot of hard work." C. B. Kentnor, Jr., President, **W. S. Rockwell Co.,** Fairfield, Conn.

"Use of vacuum furnaces for 'garden variety' brazing as well as 'exhaust' jobs—plus expanding use of vacuum. Also, use of nitrogen as atmosphere." W. E. Sauter, General Manager, **C. I. Hayes, Inc.,** Cranston, R. I.

"Our customers are demanding higher quality, higher operating temperatures, lower maintenance costs at lower prices. Continued product development is essential to stay ahead of competition. Also, increased sales coverage is required to contact potential customers that were not customers as short time ago as one year." C. R. Chambers, Manager, **Vacuum Furnace Div.,** Concord, N. Y.

"General business conditions." N. Lirhart, President, **Marietta Metal Products Co.,** Marietta, Ohio.

Continued

(Westinghouse Photo)

GEAR PROBLEMS?

—check with

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GEAR PERFORMANCE to match the ever-increasing power and speed of modern machines is a Fairfield specialty. This is possible because Fairfield has long held a position of leadership in utilizing the most advanced methods, equipment, and techniques for producing better gears. By keeping apace with modern engineering trends, Fairfield renders an invaluable service to many of the nation's leading machinery builders.

If you have a gear problem, check with Fairfield. Our engineers are well-qualified to give you expert recommendations. CALL OR WRITE.

SPUR GEARS—Straight, helical, and internal. Sizes from 16 pitch, 1½" dia., to 1½ pitch, 36" dia.

HERRINGBONE—(Fellows Type). Sizes from 1½" to 15"

SPIRAL BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

STRAIGHT BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

HYPOID—Sizes from 1½" to 28" dia.

ZEROL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 21" dia.

WORMS AND WORM GEARS—Worms to 7" dia. Worm gears to 36" dia.

SPLINED SHAFTS— Lengths to 72".

DIFFERENTIALS — 3,000 to 500,000 inch pounds capacity.

Note: All of the sizes above are approximate.

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MINING MACHINES • ROAD GRADERS • BUSES • STREET SWEEPERS • INDUSTRIAL LIFT TRUCKS

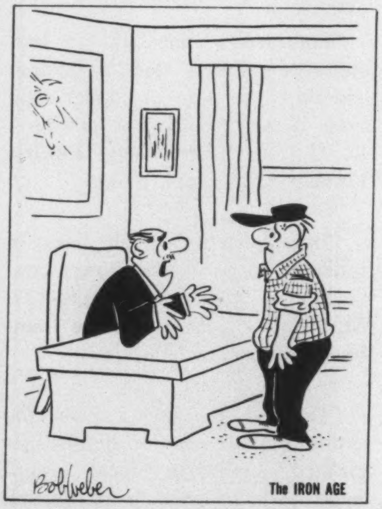
Heat Treating, continued

"Continuous efforts to improve methods of production. It would help if taxes were lowered to make more funds available for capital investments." J. B. Crabtree, Vice President, **American Gas Furnace Co.,** Elizabeth, N. J.

"Expansion of our field of endeavor should increase business. Price structures due to type of settlement made in steel strike can be a factor in sales." L. B. Rosseau, President, **Ajax Electric Co., Inc.,** Philadelphia.

"Settlement of steel strike—the new open coil annealing method is beginning to 'snowball' "! C. F. Olmstead, President, **Lee Wilson Engineering Co.,** Cleveland.

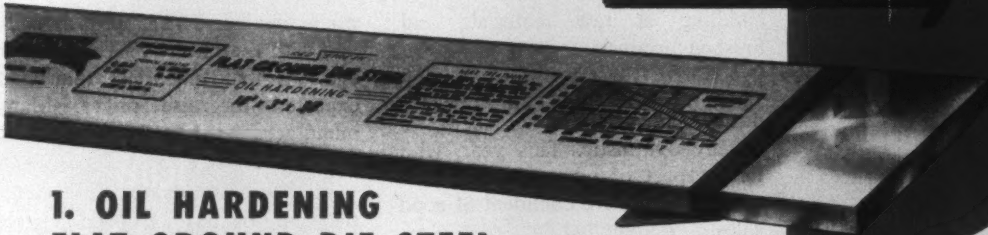
"The obvious trend toward the purchase by industry of higher grade equipment and the introduction of a new line of progressive batch type carbo-nitriding-carburizing equipment coupled with other important improvements in our line will have profound beneficial influence in our 1960 sales." G. C. McCormick, President, **Industrial Heating Equipment Co.,** Detroit.



"I thought getting you the latest machinery would help. But now you're doing everything wrong automatically."

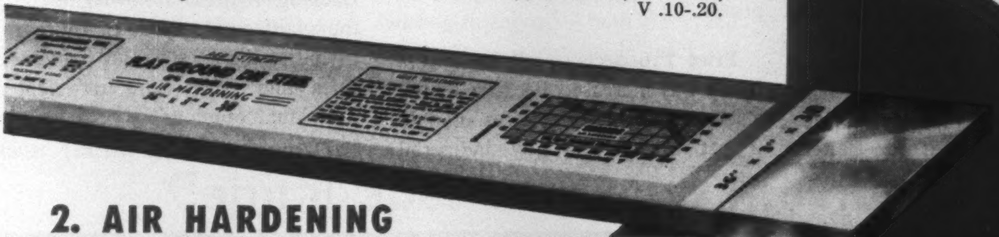
SIMONDS

gives you all 3



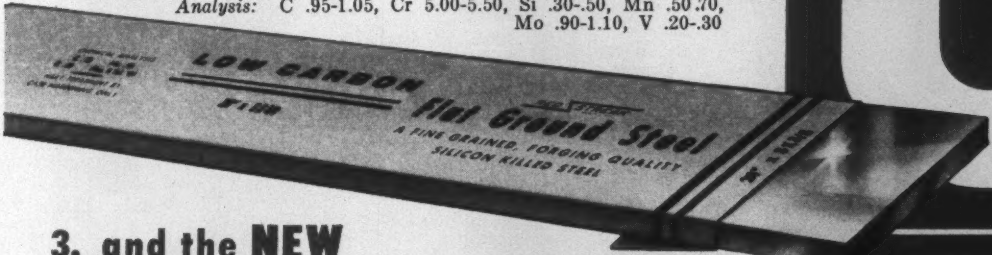
1. OIL HARDENING FLAT GROUND DIE STEEL

Simonds quality-controlled tool steel . . . precision ground . . . ready-to-use . . . comes in 1001 stock sizes for 1001 uses: punches, dies, machine parts, small tools, etc. Spheroidize-annealed for best machinability. 18″ and 36″ lengths . . . flats and squares . . . individually packaged. A.I.S.I. or S.A.E. Type No. O1. *Chemical Analysis:* C .85-.95, Mn 1.00-1.25, Si .20-.40, Cr .40-.60, W .40-.60, V .10-.20.



2. AIR HARDENING FLAT GROUND DIE STEEL

This 5% chrome, spheroidize-annealed tool steel has exceptional wear-resistant qualities yet is easy to machine and heat treat. Ground to accurate dimensions . . . suitable for a multiplicity of uses . . . individually packaged in a wide range of stock sizes . . . flats and squares . . . standard 36″ lengths (18″ lengths also furnished, if desired). A.I.S.I. or S.A.E. Type No. A2. *Chemical Analysis:* C .95-1.05, Cr 5.00-5.50, Si .30-.50, Mn .50 .70, Mo .90-1.10, V .20-.30



3. and the NEW LOW CARBON FLAT GROUND STEEL

Here's a fine-grained, forging quality, silicon-killed steel that offers important savings on jigs, fixtures, patterns, stripper plates, punch pads, die plates, die-blocking shims . . . and parts that don't require heat treatment, or in some cases just case-hardening. This new line of low-cost steel rounds out the Simonds line of Flat Ground Steel, has equally fine finish, with excellent welding quality and machinability. Furnished in a wide range of flats from 1/16″ to 1½″ thick and ½″ to 16″ wide, and in squares from ⅜″ to 2⅞″. All sizes come in standard, ready-to-use 24″ lengths, individually packaged. *Typical Chemical Analysis:* C .18, Mn .50, Si .20, S .04, P .04

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Heller Tool Co., Newcomerstown, Ohio
Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada

New Industrial Trucks Coming

Sales Increase of 8 Pct Expected in '60

Industrial truck makers are counting on the capital spending boom to help sales.

But they are also planning many new products to keep customers interested.

▪ Industrial truck makers are banking on the capital spending boom for increased sales this year. But the industry is going all out to sell its market. Almost 70 pct of the companies surveyed by The IRON AGE plan to introduce a new product this year.

This reflects the industry's drive to turn out equipment for better handling of raw materials and finished products.

Sales, Optimism — As an industry, industrial truck makers are usually optimistic. This year, with its prospect of renewed boom, the manufacturers are confident of good sales.

An average sales increase of 8 pct is predicted by those replying to The IRON AGE survey. This should bring a 6 pct increase in profits.

Price Prospects — Price uncertainty has increased because of the steel strike. But price rises of only 2 pct are forecast by industrial truck makers. This approach is in line with the industry's view a year ago. At that time, less than half expected to raise prices. Many manufacturers hoped to hold the price line.

As for business on the books, the situation has improved a great deal. At the end of 1958 industrial truck makers had average backlogs of 69 days. This year backlogs have increased 51 pct to 104 days. Backlog figures are weighted by the plant employment of those replying to the survey. But figures on sales and profits are unweighted individual opinions.

Despite the steel strike, truck

Anaconda Copper Photo

Skylift
AUTOMATIC
Skylift

makers have bolstered inventories over 1958 levels. Among those surveyed, 46 pct had larger raw material stocks than in 1958. About 9 pct had inventories equal to 1958. Finished goods stocks were not increased. Almost half of those responding had stocks below 1958 levels.

Import Threat — Together with other industries, truck makers are concerned about imports. Foreign competition has been increasing.

SIC 3537

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: (At End of 1959)
Raw Materials: NO CHANGE
Finished Goods: NO CHANGE

ORDER BACKLOGS: Average 104 Days — 51 Pct UP

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

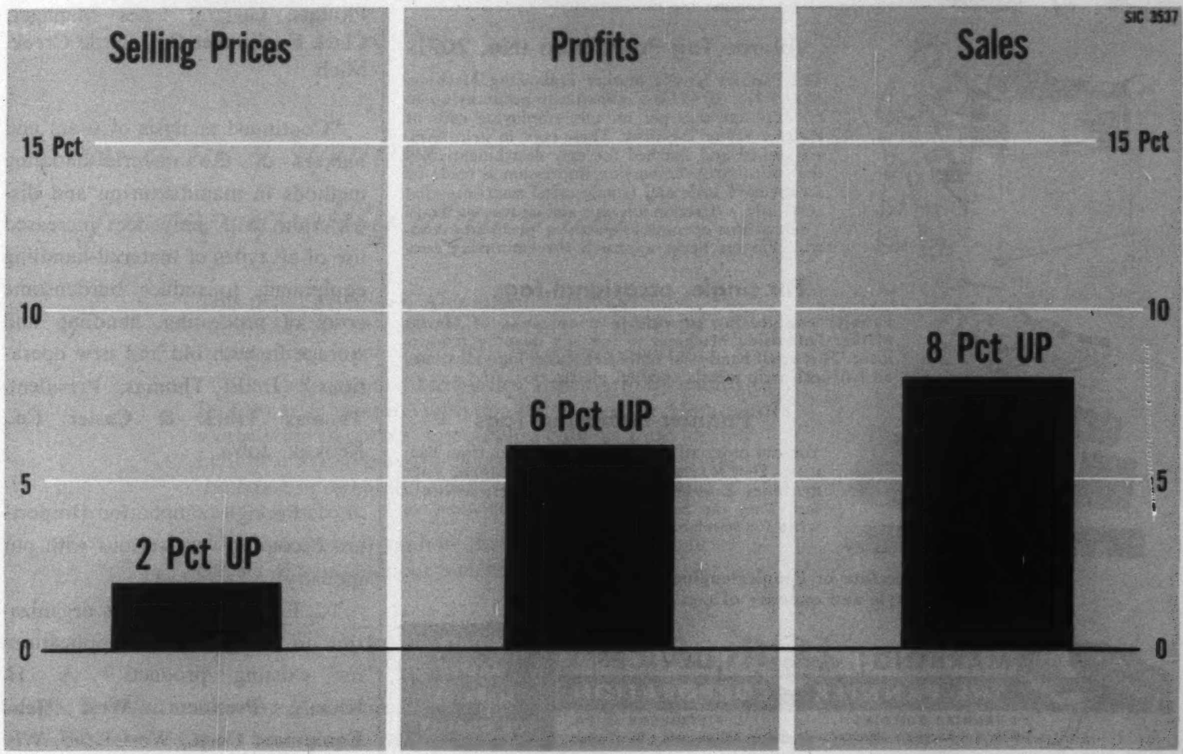
"The needs of automation . . ." N. A. Price, Executive Vice President, **Colson Corp.,** Elyria, Ohio.

"New developments in warehousing methods — both static and automatic — narrow-aisle truck attachment." E. A. Skae, President, **Equipment Manufacturing, Inc.,** Detroit.

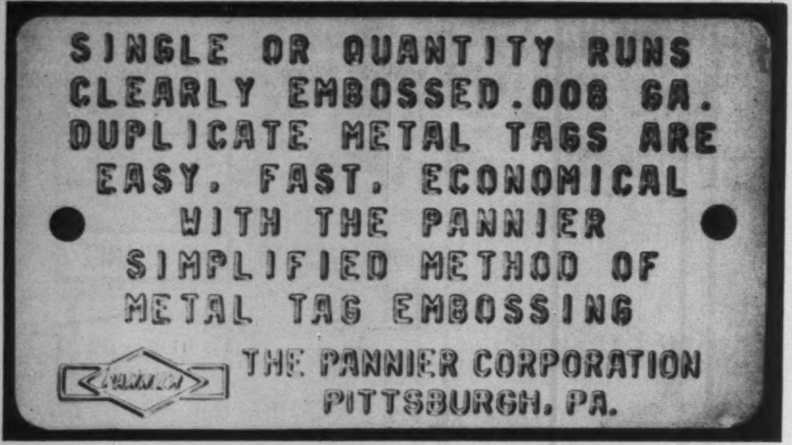
"The thing that would help us most is a reliable source of sheet and bar steel free of strike interruption and company maneuvering."

Continued

Capital Spending Will Provide the Push



CUT YOUR METAL TAG COSTS...



SINGLE OR QUANTITY RUNS
CLEARLY EMBOSSED .008 GA.
DUPLICATE METAL TAGS ARE
EASY, FAST, ECONOMICAL
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SIMPLIFIED METHOD OF
METAL TAG EMBOSSING
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PITTSBURGH, PA.

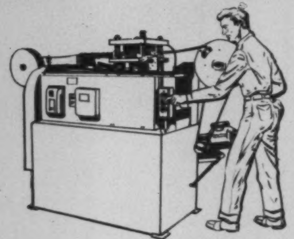
...Get clearer, sharper impressions, with PANNIER EMBOSSING MACHINES

Whether you use embossed metal tags in large, production quantities — or just a few, occasional tags — Pannier simplified embossing equipment is engineered to provide your metal tags at the lowest possible cost, greatest safety and easiest readability. Inexperienced help can operate any of the machines, large or small.

One to four tags at a time (model 344)

Model 344 Pannier Embossing Machine has two uses. It can emboss up to 4 duplicate tags, like that pictured above, in sizes up to 3" x 5½" or longer, at one operation (one letter at a time).

This same machine provides the low cost, matched male and female embossing matrices (shown at left) for use with Model 207. Paired, these two machines provide complete equipment for volume tag production.



Volume Tag Production (No. 207)

The Pannier Master Marker Embossing Machine, Model No. 207-H-6 automatically produces up to 60 duplicate tags per minute, employing coils of Pannier Safety Tag stock. These tags, in strip form, are nicked and notched for easy detachment from the coiled strip. Embossing impression is made by inexpensive male and female metal matrices—that cost only a fraction of type-and-matrix methods. The machine operates by start-stop pushbutton control. Fingers never approach the embossing area.

For single, occasional tags

Pannier engineering provides a wide range of Master Marker Embossing Machines to suit any quantity requirement. This small hand-held Embosser makes individual tags on half-inch strip metals or vinyl plastic.

Pannier Embossed Tags

You can order all your tag requirements from Pannier. They're embossed for you on these same machines. Tags are low cost and delivery service is fast. They can be made to your specifications, or write for standards and price list.

Write for literature or Pannier engineering service, specifying style and quantity of tags you require.

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PANNIER MASTER MARKERS FOR QUALITY

W. J. Webster, Works Manager, **Searles Mfg. Co.,** Cicero, Ill.

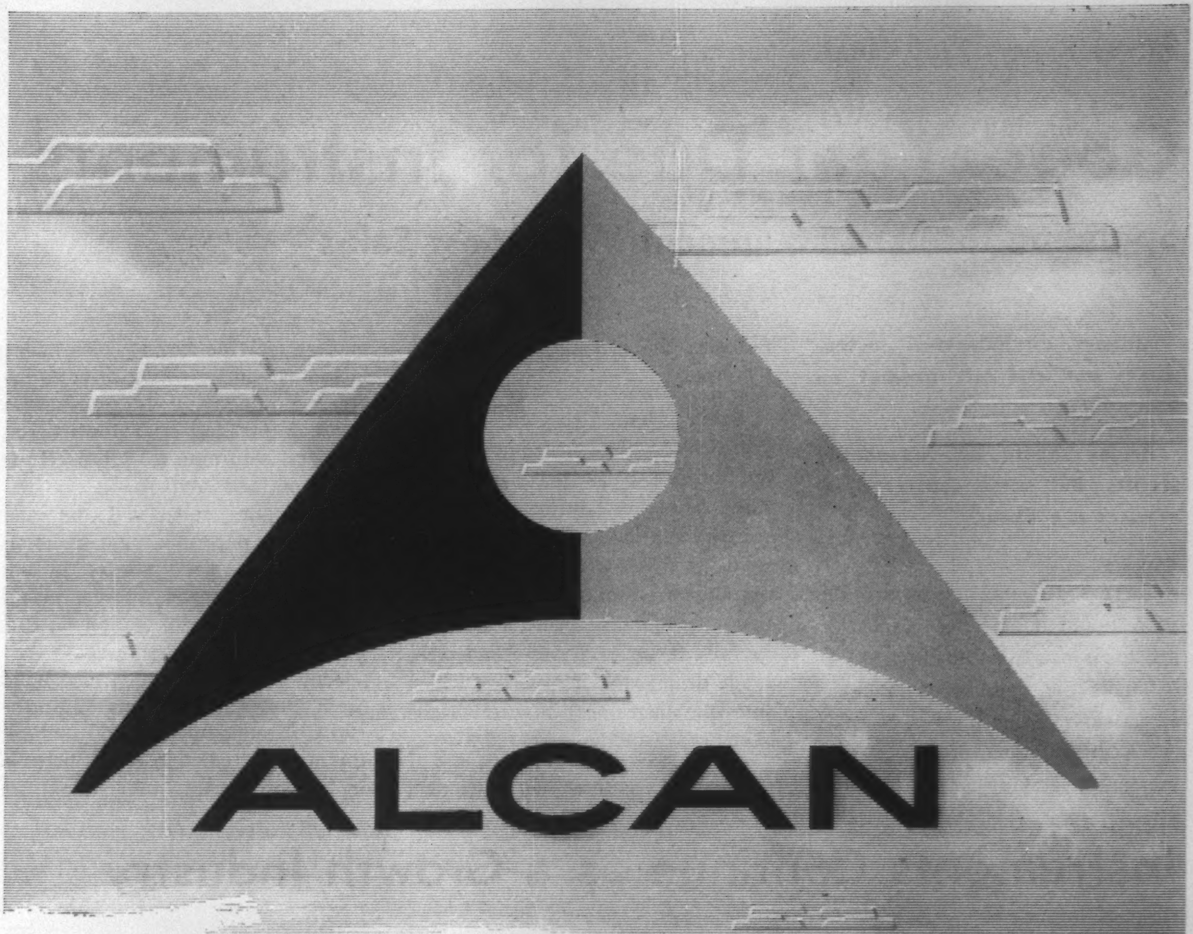
"It is our opinion that the results of our research and engineering in the development of the new fork lift truck will reflect most favorably in the planning, building and re-designing of factories, warehouses and complete material handling systems for many years in the future." C. E. Smith, President, **Towmotor Corp.,** Cleveland.

"We feel the industrial truck industry in general has matured to the point that the greatest progress in 1960 will be in the nature of refinement, rather than in drastic engineering change. For instance, there are great areas for improvement in respect to customer services. Even though we forecast that emphasis will be shifted to the areas mentioned—we feel that in view of the current and projected upswing in spending for capital equipment—our industry will continue to be a dynamic and a growing one." B. E. Phillips, General Sales Manager, **Clark Equipment Co.,** Battle Creek, Mich.

"Continued analysis of users and makers of the material-handling methods in manufacturing and distribution will influence increased use of all types of material-handling equipment, to reduce burdensome costs of processing, handling and storage in both old and new operations." J. F. Thomas, President, **Thomas Truck & Caster Co.,** Keokuk, Iowa.

"1. Foreign competition (Imports are becoming very serious with our industry).

"2. Educating our sales organization to recognize new applications for existing products." A. H. Klumb, President, **West Bend Equipment Corp.,** West Bend, Wis.



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Good Year Due for Instruments

Spending for New Equipment Will Boost Sales

Makers of industrial instruments and controls predict an 8 pct increase in sales.

Prices should be reasonably stable. But some scattered increases are likely.

- Increased capital spending this year should boost sales of measuring and control instruments.

That's the opinion of manufacturers surveyed by the IRON AGE. As a group, they predict a sales increase averaging 8 pct in 1960. But even this estimate may be conservative.

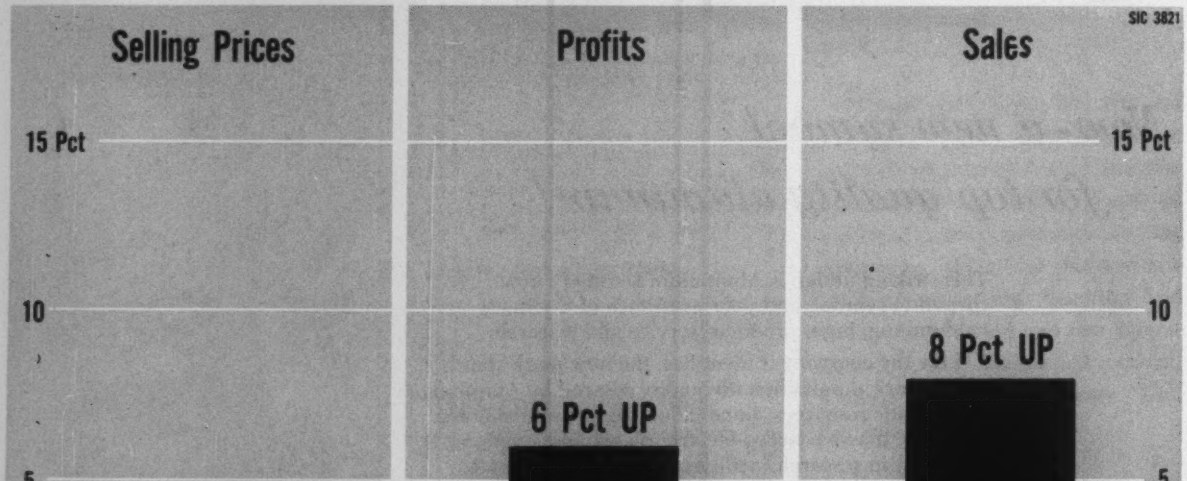
Better Than Expected—In last year's survey, the instrument makers forecast a 14 pct increase in sales. However, during 1959, the industry far outpaced industrial activity as a whole. While industrial output moved up about 6 pct in the first 10 months, instrument sales literally soared. These gains were made despite the steel strike, which hurt the instrument market in the second half of the year.

Sales Incentives — Instrument makers feel the key to 1960 sales increases is the growing drive to increase productivity. In an effort to boost output and hold down costs, industry is turning to improved instruments and controls.

Important, too, will be the stepped-up pace of capital spending this year. A good portion of the spending to improve present plants and equipment will go for instruments.

One manufacturer, I. Melville Stein, president of Leeds & Northrup Co., sums up the 1960 outlook this way: "Prediction of an increase in our orders this year (about 10

Instruments Continue as a Growth Industry



pct over 1959 levels) is based on data showing an increased rate of spending to modernize existing plants and to build new plants. Industry must give constant and increasing attention to obtaining increased productivity . . . and halting the serious inroads being made by foreign products.

"It is now recognized in many businesses that the most effective and least expensive way to increase output is through the use of modern instrumentation and automatic controls."

SIC 3821

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: **LOWER**

At End of 1959 — Finished Goods: **NO CHANGE**

ORDER BACKLOGS: Average 65 Days **8 Pct UP**

Price Outlook — Together with the sales increase in '60, instrument makers foresee an increase in profits. An earnings improvement averaging 6 pct is predicted.

Generally, there's optimism that prices can be held reasonably stable. But, as a group, the industry expects price increases averaging 2 pct. One manufacturer states, "We shall make every effort to avoid any price increases, but some modest increases may be necessary."

New Products Planned — New product development will be important in the instrument industry this year. Over 90 pct of the companies surveyed plan to introduce new products. Others said they were seeking ways to strengthen marketing and sales techniques.

Instrument industry backlogs have not advanced much in the past year. An average backlog of 65 days was reported at the end of 1959. This was only an increase of 8 pct over 1958 levels.

Inventories Stable — Inventories of raw materials and finished goods have also shown little change. Raw materials stocks were higher than in '58 according to 35 pct of those reporting. Thirty-seven pct said they were the same.

TAKE THE LONG

Plan for tomorrow's needs, today!

An R. D. Wood Press can be the key to better production capacity needed today . . . and equally efficient capacity in a growing economy in the years to come. In terms of today, you replace worn out equipment, increase production rates and cut excessive downtime. For the long pull, you are in a position to produce top quality products with top operating efficiency and stay on top of heavier production schedules with equipment that can still deliver . . . day, after day, after day.

Check the stamina story of R. D. Wood Presses, today. The long-range sure economy, too. Write for information on the type of press or presses that you require.

The presses illustrated here are representative of the complete line of hydraulic presses and valves produced by R. D. Wood Company. All of those shown are available in various capacities and others are available for different operations. Write to R. D. Wood Company for recommendations on the press to suit your specific problem.

R. D. WOOD COMPANY

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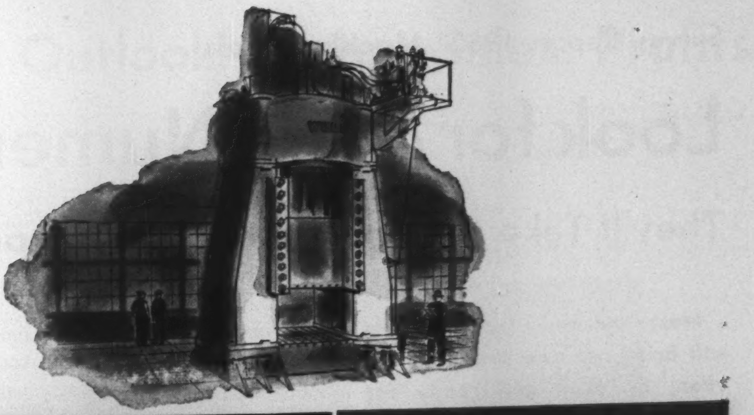
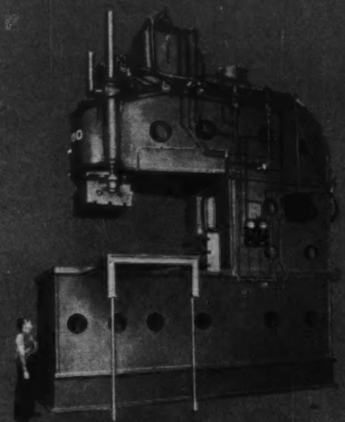
For Forging and Cogging Operations—Machine Number 8439, down-working hydraulic press. Capacity, 3,000 tons; platen size, 4'0"x5'0"; ejector ram, 51 tons; stroke of main ram, 3'0"; height of press, 31'11"; floor space, 9'6"x13'1".

For Bending and Straightening Operations—Machine Number 8441, complete with integral pumping system. Capacity, 200 tons; stroke, 12"; table size, 4'4" x 6'0".

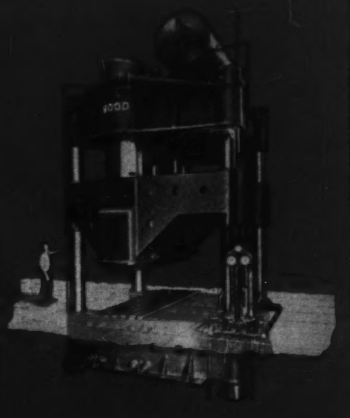
LOOK!



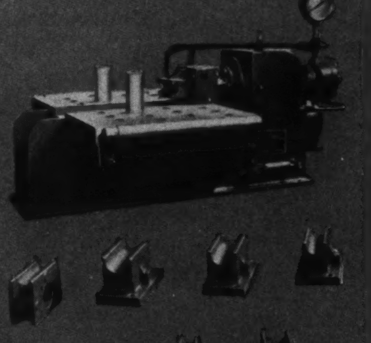


For Straightening Operations—Machine Number 8775, HydroLectric open-gap press. Capacity, vertical ram, 750 tons, horizontal ram, 400 tons; gap, 7'0"; vertical daylight, 4'6"; height of press, 26'5"; floor space, 21'10" x 20'0".

For Flanging Operations—Machine Number 8487, sectional hydraulic flanging press—also for joggling and upsetting operations. Capacity with vertical rams in unison, 300 tons; horizontal ram, 115 tons; stripper ram (in bed), 115 tons; gap, 5'0"; vertical daylight, 3'9"; height of press, 15'9"; floor space, 5'0"x14'2".



For Bending and Forming Operations—Machine Number 8548, hydraulic press. Capacity, 1,500 tons; moving platen size, 1'10" x14'2"; ram stroke, adjustable, 4'0"; height of press, 29'; floor space, 16'0"x15'6".



For Pipe Bending Operations—Machine Number 9089, horizontal cold-bending press, complete with self-contained pumping system. Capacity, 25 tons; stroke of ram, 11"; table size, 2'8½"x4'2".

For Tube Testing Operations—Machine Number 9284, hydrostatic tube testing machine. Capacity, 4½" to 12" OD tubes, maximum tube length, 35'; test pressure, 700 to 1,500 psi; average production (12" tubes, 35' long), 30 per hour; floor space required, 5'0"x45'0".

Complete Line of Hydraulic Valves—Every hydraulic valve you need for a new system or updating an existing installation. Choose from a complete line of stop valves, check valves, operating valves, safety relief valves, shock absorbers, accumulator control valves and a large variety of special valves.

Survey Report 1960 | **Machine Tools**

Look for More Numerical Controls

They'll Take the Spotlight at 1960 Exposition

Most machine tool builders will bring out new products this year, as they get ready for the Exposition in September.

Numerical controls, imports, steel strike and depreciation revision are uppermost in builders' marketing plans.

- Machine tool sales will be 14 pct higher this year than in 1959. Profits will increase 13 pct and prices three pct.

This prediction comes from machine tool companies which employ about 66 pct of all production workers in the industry. Backlogs at the end of the year stood at 87 days against 60 days in year-end 1958, an increase of 45 pct.

Big Year Ahead—Behind these figures lies an important year for the machine tool industry. Highlight of the year will be the Machine Tool Exposition in Chicago, during the early part of September.

Here, builders will display their latest equipment for improving production efficiency. Beset by mounting imports of lower-priced foreign machine tools, the industry will be out to prove that U. S. machine tool technology provides the best answer to lower production costs.

Many New Products — Seventy-five pct of the companies responding to The IRON AGE annual survey report they will bring out at least one, probably more, new products this year.

This unusually high figure reflects the all-out drive to put a best foot forward at the Machine Tool Exposition. Numerical controls may well grab the spotlight.

Of all the comments from machine tool builders this year, numerical controls was the one most mentioned as having the most important effect on the industry during 1960.

Import Threat—The next most frequently mentioned subject was foreign imports. More and more, companies are either building overseas or looking into the possibilities. The reason: Lower labor costs and consequently a chance to regain foreign markets for standard-type machine tools. Meanwhile, imports of machine tools to the U. S. are seriously hurting some companies.

Steel Strike Effects — The steel strike was another important concern for tool builders. Many fear a new work stoppage in late January will slow up order placing. But once steel starts flowing, backlogs will lengthen sharply.

SIC 3541

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: NO CHANGE

At End of 1959

Finished Goods: NO CHANGE

ORDER BACKLOGS: Average 87 Days — 45 Pct UP

What Industry Executives say:

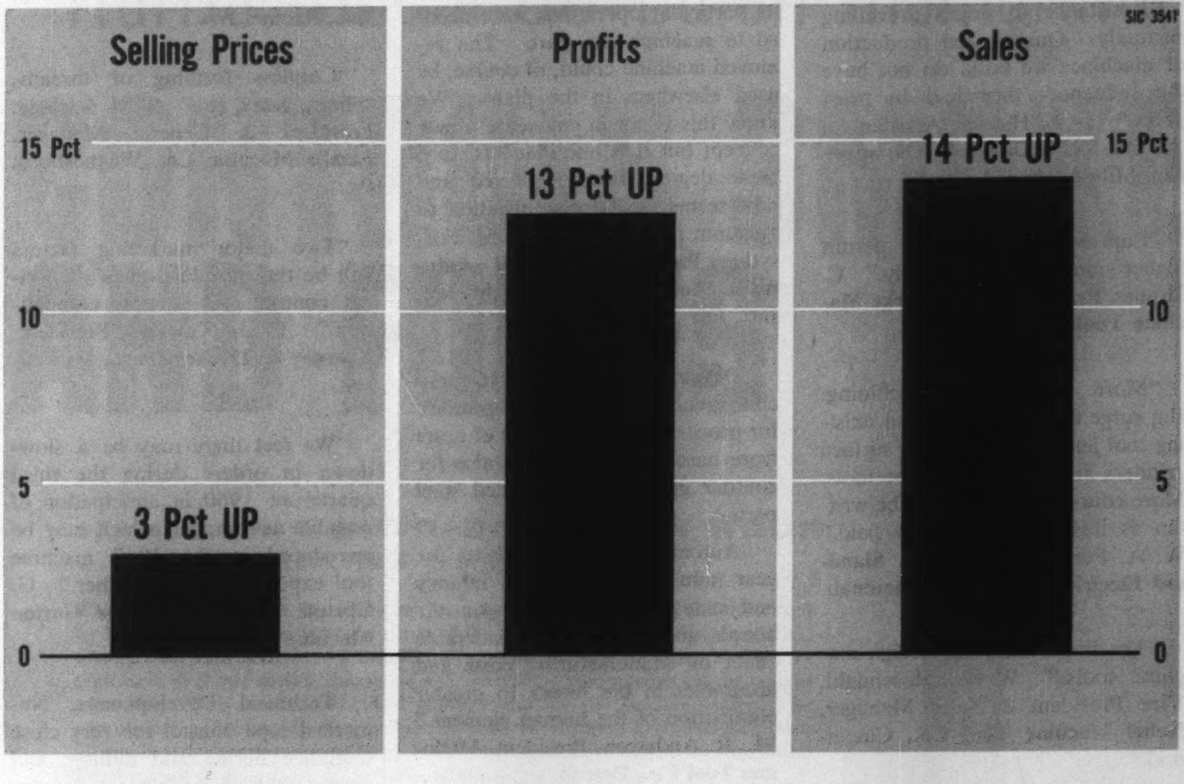
Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Imports of foreign machine tools will be our biggest problem." A. J. DeWolf, President, **Dreis & Krump Mfg. Co.,** Chicago.

"The aftermath of the steel strike could very appreciably delay any quick upturn in the capital goals industry and what might have been a good first quarter may now be tight —with continued rough competition. Our advice to the purchaser would be to buy his capital equipment now while deliveries are good —and be ready to go when steel loosens up." J. C. Pease, President, **New Britain Gridley Machine Div.,** New Britain, Conn.

"A more realistic depreciation policy in our tax laws would do

Machine Tool Outlook: Higher Sales, Profits



much to improve sales. The big machine tool market is in replacement for greater productivity. The Machine Tool Show in September 1960 should improve the market picture." A. V. Bodine, President & Treasurer, **Bodine Corp.,** Bridgeport, Conn.

"We expect to increase the sale of our tape-controlled machines. And we propose to distribute our lower priced machines through dealers, thus getting wider distribution." F. G. Burg, President & General Manager, **Burg Tool Manufacturing Co., Inc.,** Gardena, Calif.

"We feel we must develop new machines of quality and operating precision in order to compete with present comparable equipment of foreign manufacture. This problem must be met if we are to maintain our position in the industry. Price is also an important factor in keeping ourselves competitive due to high labor costs in this country compared with those abroad." H. P. Chaplin, President, **Cone Automatic Machine Co., Inc.,** Windsor, Vt.

"Inadequate pricing due to general low level of activity." W. H. Bennett, President, **The Hydraulic Press Manufacturing Co.,** Mount Gilead, Ohio.

"Development and sale of a new line of bearings which we will carry in stock and offer at considerably lower prices so that many more users can use anti-friction bearings." F. J. Donovan, President, **The Kaydon Engineering Corp.,** Muskegon, Mich.

"Numerical controls." G. H. Johnson, President, **Gisholt Machine Co.,** Madison, Wis.

"Unquestionably the impact of the 1960 Machine Tool Show on our industry and on the metal trades at large will be important and substantial. Many new developments will make their first appearance at this show. Our company, for example, will show, on public exhibition for the first time, a new line of microstoning equipment, representing a new and revolutionary breakthrough in the production of superlative surface finishes and the correction of the geometry of out-of-round and lobular work. We should expect and hope that the long deferred recovery of the machine tool industry will take place in the ensuing year." F. S. Blackall, Jr., President & Treasurer, **The Taft-Peirce Mfg. Co.,** Woonsocket, R. I.

"Customer attraction to tape control and spacing tables heads the list on the technical side." W. A. Dermody, President & General Manager, **Carlton Machine Tool Co.,** Cincinnati.

Continued

"Resistance to prices prevailing currently. Quality and production of machines we build do not have the influences they had in prior years." J. A. Hauser, Assistant to the President, **David & Thompson Co.,** Milwaukee.

"Improved small tools permit higher spindle speeds—yearly." C. Strauss, President, **U. S. Burke Machine Tool Co.,** Cincinnati.

"More electrolytic machining. Big surge to convert new and existing tool and cuttle grinders, surface grinders and special machine tools. More editorial items should be written as this subject big new field." W. A. Ferguson, President, **Standard Electrical Tool Co.,** Cincinnati.

"The importation of foreign machine tools." W. G. Rosendahl, Vice President & Sales Manager, **Nebel Machine Tool Co.,** Cincinnati.

"Increasing wages require machines to make offsetting cost reductions." R. A. Cole, Executive Vice President & General Manager, **Production Machine Co.,** Greenfield, Mass.

"It is felt that the Machine Tool Show of 1960 will have an effect on the sale of equipment. I predict that there will be a substantial increase in orders in the last quarter of 1960, as a result of the Machine Tool Show." F. X. Bujold, General Manager, **Frauenthal Div., The Kaydon Engineering Corp.,** Muskegon, Mich.

"We think there is a vast market for some new machine tool ideas in the 'medium production' field—where production is neither high nor low. We visualize transfer lines in these plants—not of the conventional variety—but a line of standard machines with transfer devices in between to move the work pieces. Each machine would be self-contained, could be put into the line or removed depending whether or not its particular operations were needed to machine the part. The removed machine could, of course, be used elsewhere in the plant. We know this is not in any sense a new concept but it is one that has, to a great degree, been neglected and now seems ideal for application to 'medium production'." N. M. Forsythe, President, **National Automatic Tool Co., Inc.,** Richmond, Ind.

"Development of electrolytic machining holds considerable promise for processing, like grinding of gears from hardened blanks and also for contour grinding in hardened steel parts. . . .

"Automation as applied to the gear industry is still in its infancy and many new ideas are on the boards and may have considerable effect on manufacturing costs and accuracies in the future to greater elimination of the human element." M . R. Anderson, President, **Michigan Tool Co.,** Detroit.

"The biggest future problem anticipated is low price foreign equipment invading American markets. It is economically impossible to combat such low prices with our high cost standards of labor and material." P. W. Pearson, Sales Manager, **Kling Bros. Engineering Works,** Chicago.

"Greater use of aluminum in the automobile industry." W. C. Olson, President, **Besly-Welles Corp.,** South Beloit, Ill.

"I think it will depend upon steel available to our customers." C. W. Bettcher, chairman, **The Eastern Machine Screw Corp.,** New Haven, Conn.

"Too much money is being spent on inadequate, or incompetent maintenance. Skilled anticipatory maintaining needs thinking about!" J. A. Bradner, President, **Lees-Bradner Co.,** Cleveland.

"Improved competitive products." J. E. Erskine, President, **Racine Hydraulics & Machinery, Inc.,** Racine, Wis.

"Chipless forming of threads, splines, gears, etc." S. M. Stiehele, President & General Manager, **Landis Machine Co.,** Waynesboro, Pa.

"Two major marketing factors will be the introduction of numerical control and foreign competition." F. J. Trecker, President, **Kearney & Trecker Corp.,** Milwaukee.

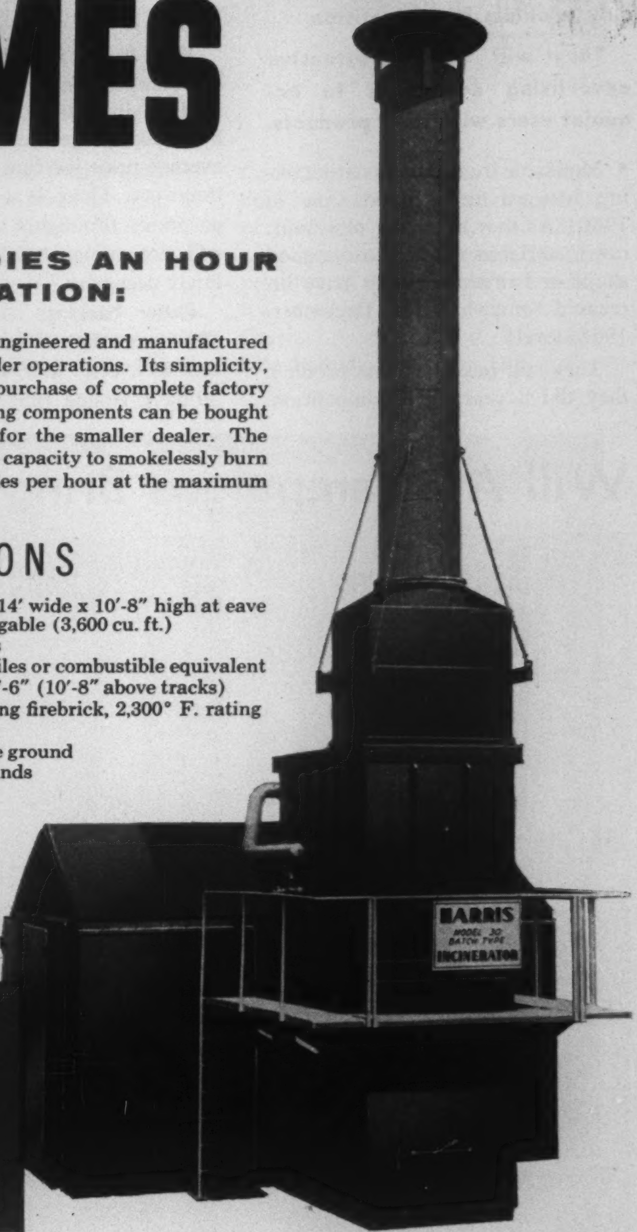
"We feel there may be a slowdown in orders during the third quarter of 1960 in anticipation of possible new models which may be introduced at the 1960 machine tool exposition in September." G. Gorton, President, **George Gorton Machine Co.,** Racine, Wis.

"Technical Developments: Numerical tape control for very close tolerance boring and milling; and semi-automatic machines, tape controlled if desired, for small lot production at **reasonable** prices. Marketing: Education of industry of the importance of the cutting tool to optimum machine performance. Explanation to industry of proper methods of grinding and caring for cutting tools to achieve better tool life. Help industry justify purchases of new machines, particularly with sophisticated control systems. This will require careful study, both builders and users." H. A. Beyer, Vice President, Sales, **De Vlieg Machine Co.,** Ferndale, Mich.

"Unless automotive finds a major change in the power train group necessary or develops a program of increased production, we anticipate little change in total industry shipments. Shipments in 1959 will not exceed 1958 and 1960 should show little improvement. The industry should continue on an extremely competitive basis." H. N. Maynard, President, **Snyder Corp.,** Detroit.

Harris Model 30 Batch Incinerator

CONTROLS SMOKE AND FUMES



HANDLES 4 AUTO-BODIES AN HOUR ...CONTINUOUS OPERATION:

This first of a complete line of incinerators being engineered and manufactured by Harris is intended to meet the needs of the smaller operations. Its simplicity, overall cost, and flexibility of installation permit purchase of complete factory built unit, or if you prefer, the major and controlling components can be bought separately. This provides an ideal arrangement for the smaller dealer. The exceptionally effective afterburner provided has the capacity to smokelessly burn all combustible matter, except tires, in 4 automobiles per hour at the maximum firing rate of 40 gallons of #2 fuel oil per hour.

SPECIFICATIONS

Kiln size	20′ long x 14′ wide x 10′-8″ high at eave 14′ at gable (3,600 cu. ft.)
Burning time	25 minutes
Hourly capacity	4 automobiles or combustible equivalent
Door openings	11′-0″ x 10′-6″ (10′-8″ above tracks)
Afterburner lining	9″ insulating firebrick, 2,300° F. rating
Stack diameter	36 inches
Stack height	35 ft. above ground
Estimated weight	55,000 pounds

Talk with a Man
from Harris

HARRIS FOUNDRY
& MACHINE CO.
Since 1889
CORDELE, GEORGIA

Malleable Founders Look to '60

A Modest Improvement Seems Likely

Malleable iron founders should have a good year in 1960. The only problem is competition.

They will turn to extensive advertising campaigns to acquaint users with their products.

▪ Malleable iron founders are looking forward to a good year in 1960. As they enter the new year, raw material inventories are in good shape and order backlogs have increased somewhat over December, 1958, levels.

They still face the same problem they did a year ago: Competition. But even in the face of this, profits are estimated to climb eight pct with a sales increase of six pct.

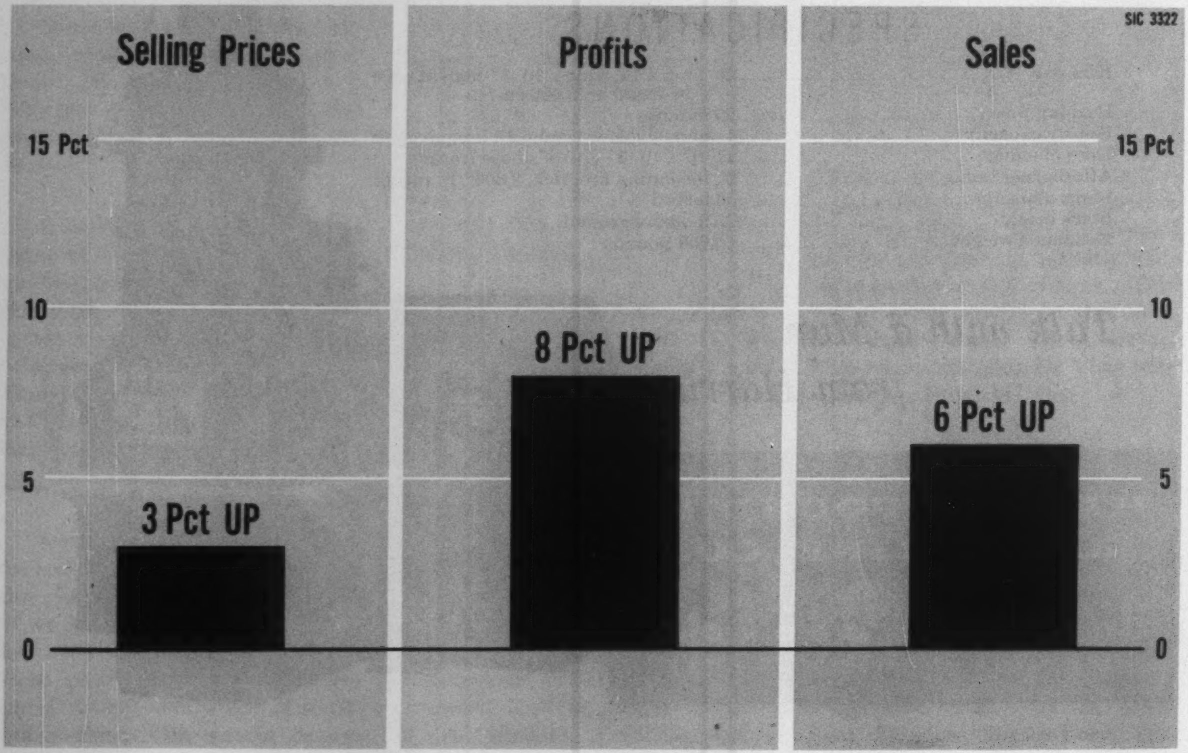
Tight Price Line—Because of the stiff competition, prices will have to be held in a tight line. Estimates by industry members indicate the average price increase will be about three pct. There is a reluctance to go above this figure and even this will not come about unless absolutely necessary.

Order backlogs at the end of 1959 were up 18 pct over a year ago. Deliveries now will take about 39 days. In late 1958 they took 32.

Raw Materials Good — There should be no production cutbacks or delays because of inadequate raw material supplies. Of firms responding to The IRON AGE survey, 37 pct said they have more raw materials on hand than they did at the end of 1958. Another 58 pct said their levels are about the same, and only five pct had lower inventories.

Many founders are planning to exploit the advertising field to make their products more generally known and to get more sales. Others feel that the ad campaign being carried on by the Malleable Iron Founders' Council will serve as a

Will Ad Campaigns Bring Fatter Profits?



means to acquaint potential users with products of the industry.

Road to Profits—Shell molding and pearlitic malleable iron are also looked at as a means to greater profits during 1960. Many manufacturers feel these will account for greater sales, and give them top billing on their list of items that will be of most benefit to the industry this year.

Others feel the cost of equipment expansion during 1955-57 has been made up, and that there will be new demand for machine tool products. This, of course, will mean a business increase for malleable founders.

Although a few men in the industry do not look at 1960 as a prosperous year, the consensus is that it will be profitable.

SIC 3322

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: **NO CHANGE**

↑ At End of 1959 ↓

ORDER BACKLOGS: Average 39 Days **18 Pct. UP**

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

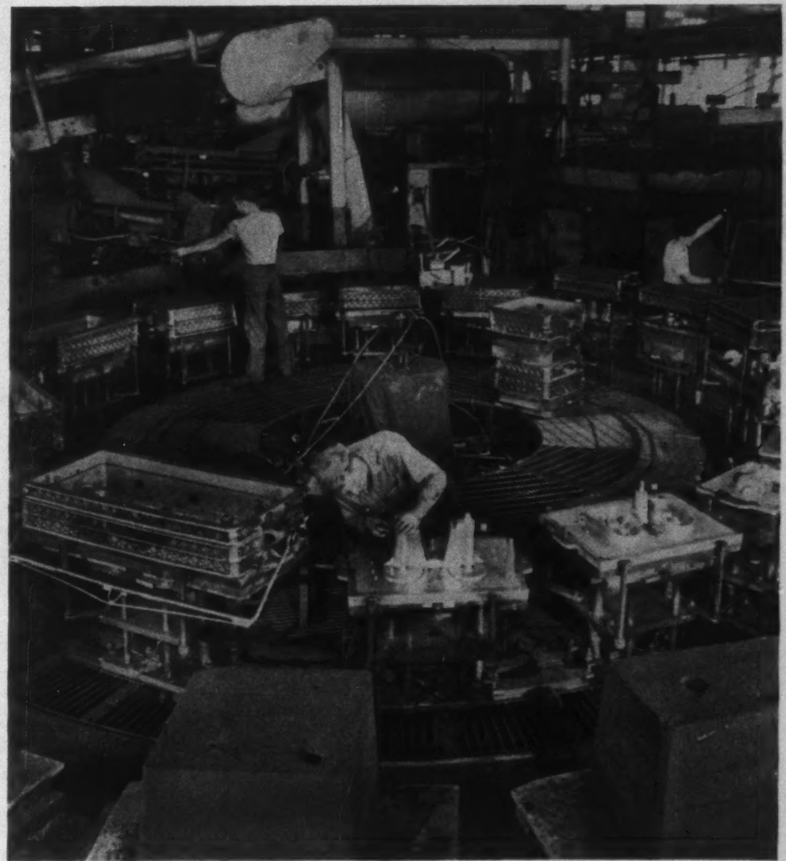
"Technical—Development of as-cast material with minor heat treat to give equivalent porperties of malleable. Marketing—The number of autos sold." J. J. Shellaburger, Vice President, Industrial Sales, **The Dalton Foundries,** Warsaw, Ind.

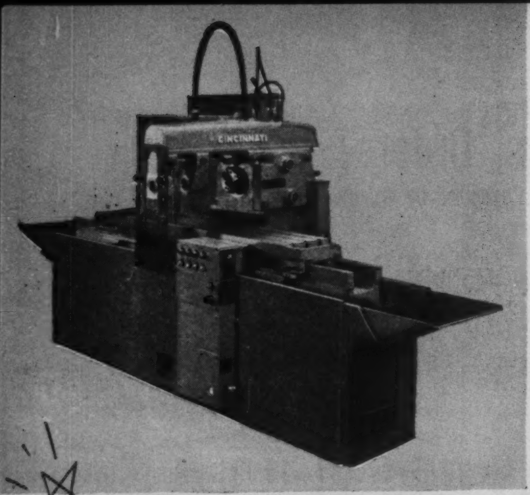
"Better engineering conception of malleable use—through advertising—should broaden scope." J. W. Schauss, Controller, **Muncie Malleable Foundry Co.,** Muncie, Ind.

"Effects of the malleable castings council advertising program and hard selling." A. F. Crone, Executive Vice President, **Acme Steel & Malleable Iron Works, Inc.,** Buffalo.

"Shell molding; the industry's advertising plans; and pearlitic malleable iron are the three we rate at the top." U. C. Brisse, Treasurer, **The Laconia Malleable Iron Co., Inc.,** Laconia, N. H.

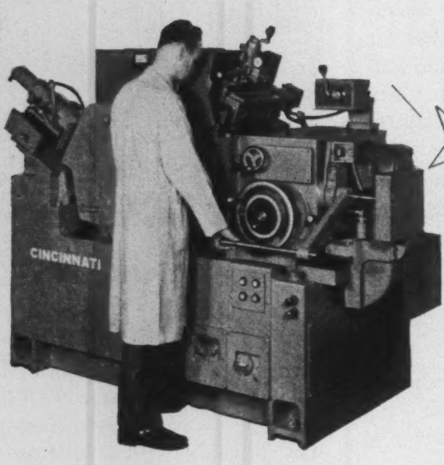
"We feel that the coming year will see the completion of the digestion process relative to the tremendous capital equipment expansion of 1955-1957 and that there will be a resurgence of demand for the products of the machine tool industry, of which we are a part." J. A. Currie, President and Treasurer, **Erie Foundry Co.,** Erie, Pa.





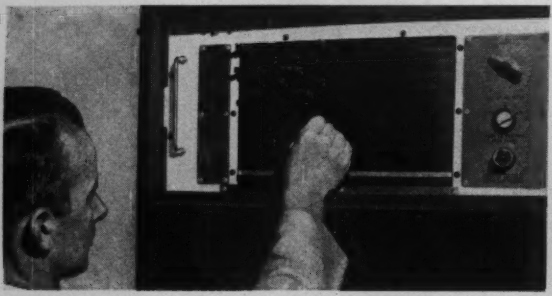
These STARS of

put new

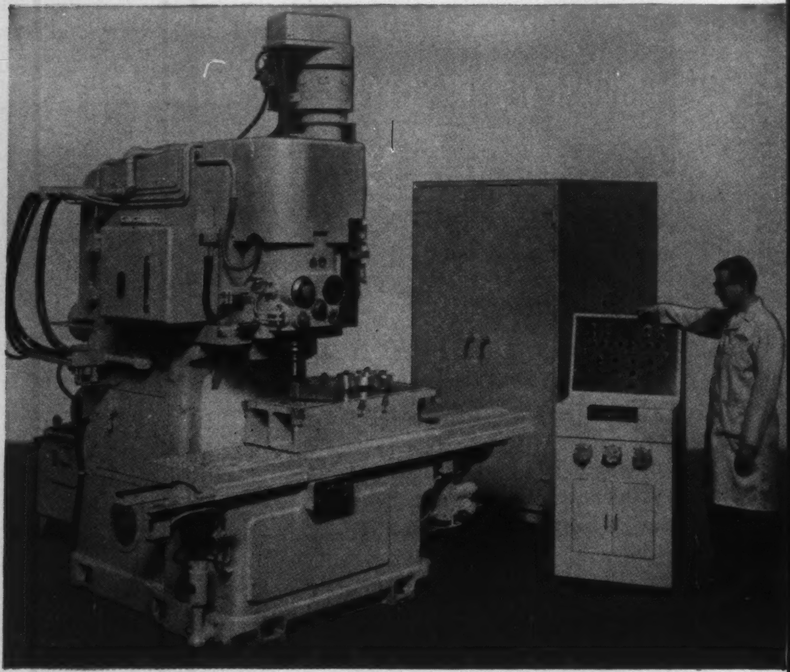


Centuramic Centerless Grinders raise quality standards and broaden the range of the centerless method. The 210-6 is the "Handy Andy" size for job shops, while the 340-20 size at the other extreme introduces a new extra low-cost concept . . . thrufeed grinding with 20" wide wheels.

100 and 200 Series HyPowermatic Milling Machines have the flexibility for both small lots and high production runs. Two-direction table feed cycles and automatic spindle stop are standard feature-advantages. Built in plain and duplex styles with conventional table feed cycles, and automatic rise and fall and tracer controlled styles with Telematic selection of cycles.



Telematic Control is a simple pegboard selection of table and spindle carrier automatic cycles. Auxiliary operations such as fixture clamping may also be plugged in. Applicable to 100 and 200 Series Rise and Fall and Tracer Controlled HyPowermatic Milling Machines.



Cincinnati Acramatic Numerical Control offers the unique advantage of unified machine and control design and responsibility. Its field covers simple two-axis positioning for drilling, to complex three dimensional contour milling. The above 16" Vertical Hydro-Tel Milling Machine shows a three dimensional setup.

CINCINNATI

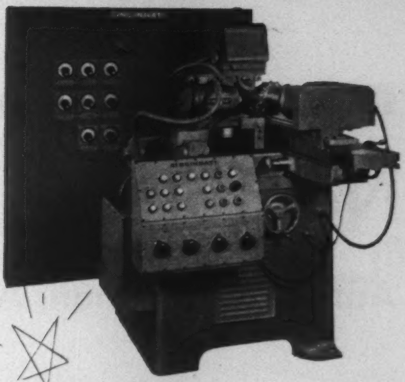
BUILDERS OF FINE MACHINE TOOLS: MILLING • GRINDING • BROACHING • ELECTRICAL DISCHARGE MACHINING • DIE SINKING • CUTTER AND TOOL GRINDING • PRODUCTION LINES • METAL FORMING •• HARDENING MACHINES

75th ANNIVERSARY

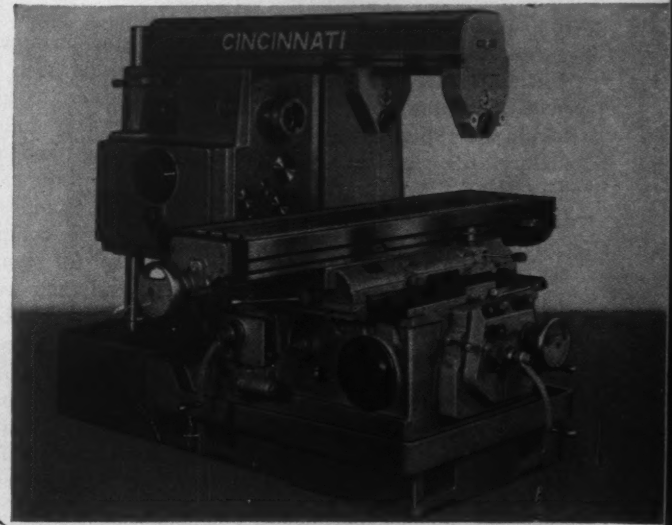
Adventures in PROGRESS

life in cost-cutting programs

ADVENTURES IN PROGRESS marked Cincinnati Milling's 75th year of serving the metalworking industry. The event starred many all-new machine tools. These machines represent something more than new equipment, they represent the Mill's philosophy of always striving to build better machines to help you create greater values in your products. Information on the stars of ADVENTURES IN PROGRESS may be obtained by writing to **The Cincinnati Milling Machine Co., Cincinnati 9, Ohio.**



Automatic Cutter Grinder initiates a brand-new approach to cost prevention . . . the automatic precision sharpening of cutting tools. Cutter manufacturers and high volume users of plain and stagger tooth cutters will welcome this machine.



All-Purpose Milling Machine combines flexibility of knee-and-column types with productivity of bed types. Fixed height table facilitates work handling. Wide range of speeds and feeds are selected by power with a single lever.

CINCINNATI

Super Precision 4" Plain Grinder puts accuracy requirements of 25 millionths on a production basis. Cincinnati's Grind-a-Mate gaging system automatically sizes the part to a ring gage or mating member.

CINCINNATI

Elektrojet Electrical Discharge Machines embody the machine tool builder's approach to this highly significant method of removing metal. Give you 35 choices of equipment, covering the requirements for unusual or "impossible" machining operations on a wide variety of parts ranging from small missile components to forging dies.

CINCINNATI®

Nonferrous Founders Hopeful

Autos, Automation, Aluminum, Are the Big Factors

Nonferrous foundries figure 1960 sales and profits will be up 10 to 11 pct.

Most have stocks of raw materials better than at the start of last year.

- Automotive, automation, aluminum stack up as the big three factors in the 1960 nonferrous foundry picture. It's clear from replies to The IRON AGE survey that, as they go, so will go the industry.

It's also clear that most founders are expecting them to go well. The consensus for 1960 is cautious optimism.

Better Sales—The average nonferrous foundry expects 1960 sales to be 11 pct ahead of 1959. Price increases of about two pct are likely to put profits for the year up about 10 pct over last year.

But it will be far from clear sailing, and far from across the board. The industry most look to for support will pose a threat to others.

Automotive Factor — One foundry fears "excessive capacity causing extremely low profits or losses in zinc diecasting industry that caters to automotive."

Another complains of "the increasing trend toward setting up of new, and the expansion of, existing captive facilities . . . Captive facilities are competing in the open market for regular jobbing business beyond their own corporate structure." No doubt this founder is referring to the automakers.

More automation, particularly in diecasting equipment, will help solve a problem that is becoming more acute for job founders. This, says one founder, is "the continuous emphasis on price . . . a corresponding and completely illogical emphasis on quality without any apparent conception of the incompatibility of the two."

Lots of Inventory—Even if business is better, they won't be much of an improved market for primary metal suppliers, at least for a while. The IRON AGE survey revealed that 53 pct of nonferrous foundries finished 1959 with more raw material in stock than at the start of the year. Only two pct had less. And the other 45 pct finished up the year with about the same raw material stocks as they had last January.

An indication that the founders are building their hopes on solid ground is that backlogs dropped almost imperceptibly in 1959. The average backlog of those replying to the survey at the end of 1959 was 50 days, compared to 51 days at the end of 1958.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"The increased use of aluminum in automobiles." G. H. Murry, **Ford Motor Co., Die Casting Div.,** Sheffield, Ala.

"The use of aluminum in automotive field should be the most important influence on the foundry industry. This influence will not only be from increased tonnage but from the effect of **automation** brought about by demands of production and price from the automotive industry." K. A. Kigney, President. **Oberdorfer Foundries, Inc.,** Syracuse, N. Y.

"Automation of diecasting machines." F. C. Livesay, President, **Kuhlman Die Casting Co.,** Kansas City.

"The expansion of industry seems to be greater than availability of qualified sales and supervisory personnel. Machinery is no problem—we can tool and produce any job. What we need is more people with a dedicated incentive to succeed." R. R. Dreibus, President, **Harvill Corp.,** Los Angeles.

SIC 3361

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

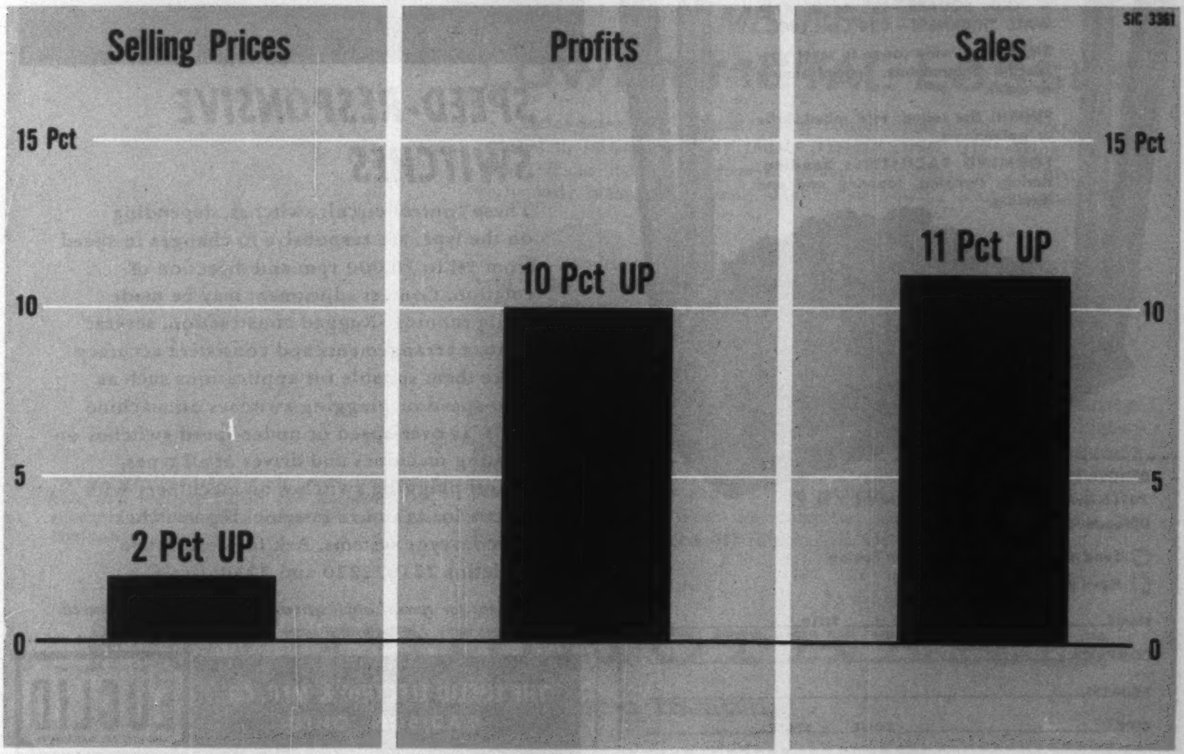
INVENTORIES: Raw Materials: **HIGHER**

At End of 1959

ORDER BACKLOGS: Average 50 Days **2 Pct DOWN**

"During the past three years, the investment casting industry has seen radical changes among the producers. A few better companies grew stronger and wiser while others faded in comparative prestige and production and technical capacity. Several discontinued operations. We believe this is healthy, for the industry and for the customer. At the same time, however, this industry stabilization has reflected a greater need than ever before to meet competition more aggressively. Our situation is neither unique nor singular; skillful overall marketing and constantly improving customer service is demanded." J. H. Morison, President. **Hitchiner Mfg. Co., Inc.,** Milford, N. H.

The Goal: 10 Pct Improvement in Profits



WHAT'S THE SHAPE OF YOUR PROBLEM?

BUILD IT BETTER

WITH

WELDED STEEL

TUBING

For *increased* production at *reduced* cost specify Berger quality tubing. Our complete engineering facilities can help you widen your design potential and produce a *better* product, at a *better* price. May we quote on your requirements?

There's a Berger Tube For Your Need:

SIZE RANGE: ROUND—1/4" O.D. to 4" O.D. SQUARE—1/2" to 3" O.D. WALL THICKNESS—.024" to .188".

SHAPES: A wide range to meet your specific requirements. Special shapes to order.

FINISH: Hot rolled, cold rolled, brite or galvanized.

FORMING FACILITIES: Beading, flaring, swaging, tapering and end forming.

BERGER TUBE CORPORATION
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☐ *Send me your 8 pg. booklet on Tubing*
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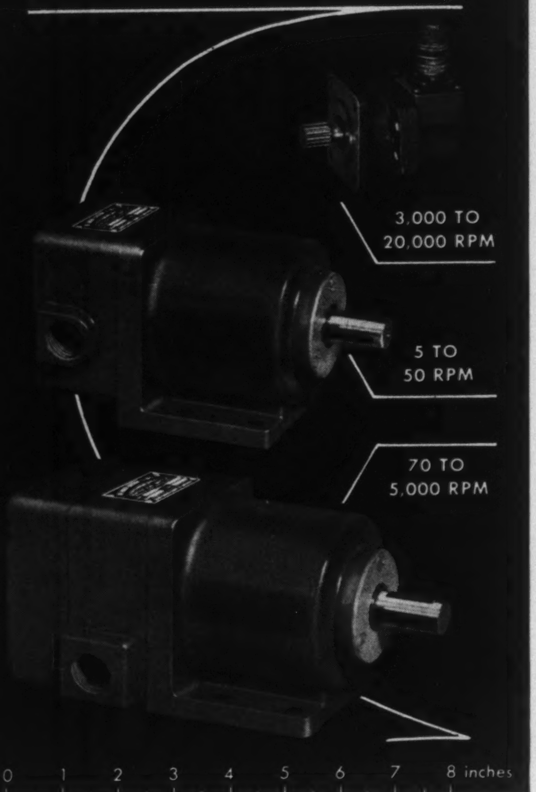
new



SPEED-RESPONSIVE SWITCHES

These control-circuit switches, depending on the type, are responsive to changes in speed from 1¾ to 20,000 rpm and direction of rotation. Contact adjustment may be made while running. Rugged construction, several contact arrangements and consistent accuracy make them suitable for applications such as zero-speed or plugging switches on machine tools, as over-speed or under-speed switches on rotating machines and drives of all types, as anti-plugging switches on machinery with inertia loads and as interlocking switches for conveyor systems. Ask for descriptive Bulletins 2210, 2220 and 2230.

Designs for special applications have been manufactured. Let us know your specifications.

THE EUCLID ELECTRIC & MFG. CO.
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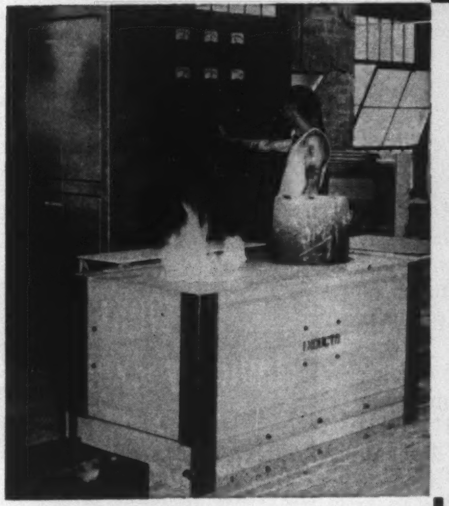

INDUCTOMELTING MEANS*

LOWER METAL LOSSES

Metal losses, as encountered in conventional melting practices, are reduced to insignificance by INDUCTOMELTING. The savings realized with Inducto melting equipment, though substantial in all metals, are particularly great in the easily oxidized or volatile alloying materials.

One non-ferrous foundry cut melting losses 80% through INDUCTOMELTING. This was made possible by higher melting speeds and the remelting of chips and turnings from machined castings which could not be done with the previous equipment without extremely high metal losses.

Why? Why should Inducto melting equipment provide such savings in metal? Because every component is designed and selected for the highest possible efficiency so that you can attain all the benefits of high-frequency induction melting at its best. With Inducto equipment, you get the highest possible melting speeds and the most accurate temperature control in the melting field today. Write for complete details—ask for Bulletin 70. Inductotherm Corporation, 412 Illinois Ave., Delanco, N. J.

**INDUCTOMELTING is high-frequency induction melting PLUS the additional advantages of Inducto design features and engineering techniques.*

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Buyers' Market in Compressors

Tough Competition Will Have Producers Scrambling

One answer to competition: A large number of new items will be introduced in 1960.

Pump and compressor makers are also in good position to keep delivery time down.

▪ Pumps and compressor makers start the new year facing the same old problem — tough competition. And they know it.

"Competition will be tougher and I don't mean maybe," reported the head of one major pump company.

The figures tell the story of how rough they expect things to be. The average pumpmaker answering The IRON AGE survey expects to translate 11 pct boost in sales over 1959, and a three pct increase in prices to realize a five pct increase in profits.

Problems Ahead — There are likely to be more gray hairs in the industry at the end of 1960 because this year the perennial problem has an additional twist. But a complication that others in metalworking also face. Quite a few answers to the survey complained of the increased competition from foreign pumps and compressors. Several suggested our tariff ought to have a good, long, second look.

What do pump and compressor makers propose to do about their problem? They'll all meet it head on. Says one: "Marketing is going to require a closer, more detailed, more intelligent and better qualified selling contacts."

New Products Coming — But this will only be the start. About 80 pct of the respondents to the survey said they planned to introduce one or more new products in 1960.

One pump maker said he is going to put more emphasis on quality at the consumer level. And several pointed to expected new developments in materials and methods that they expect to give them some edge.

All in all, it looks like a buyer's market in pumps and compressors in 1960. Not only will makers be ready to compete on price and quality, but they're geared for pretty quick delivery throughout 1960.

Inventories High—Of those answering The IRON AGE survey, 45 pct have bigger stocks of finished goods than at the end of 1958. And 46 pct have about the same level of finished goods on hand. Only nine pct are off from 1958.

When discussing problems of pump and compressor makers, you can't leave out the steel strike. Due in great part to the strike, the industry is vulnerable on raw material stocks.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Habitual price selling and cutting." A. F. Woods, General Sales Manager, **Marlow Pumps,** Midland Park, N. J.

"There will be many technical developments in the pump industry during the next year, but we feel that the marketing problem will be more intense. Capital goods industry have not recovered as rapidly as consumer items, but we feel there will be a tremendous market for equipment of all sorts. The marketing problem will have to do with extended deliveries due to steel and iron shortages which will extend deliveries." R. Webber, Vice President, **Deming Co.,** Salem, Ohio.

"Imports." A. Arutunoff, Presi-

SIC 3561

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

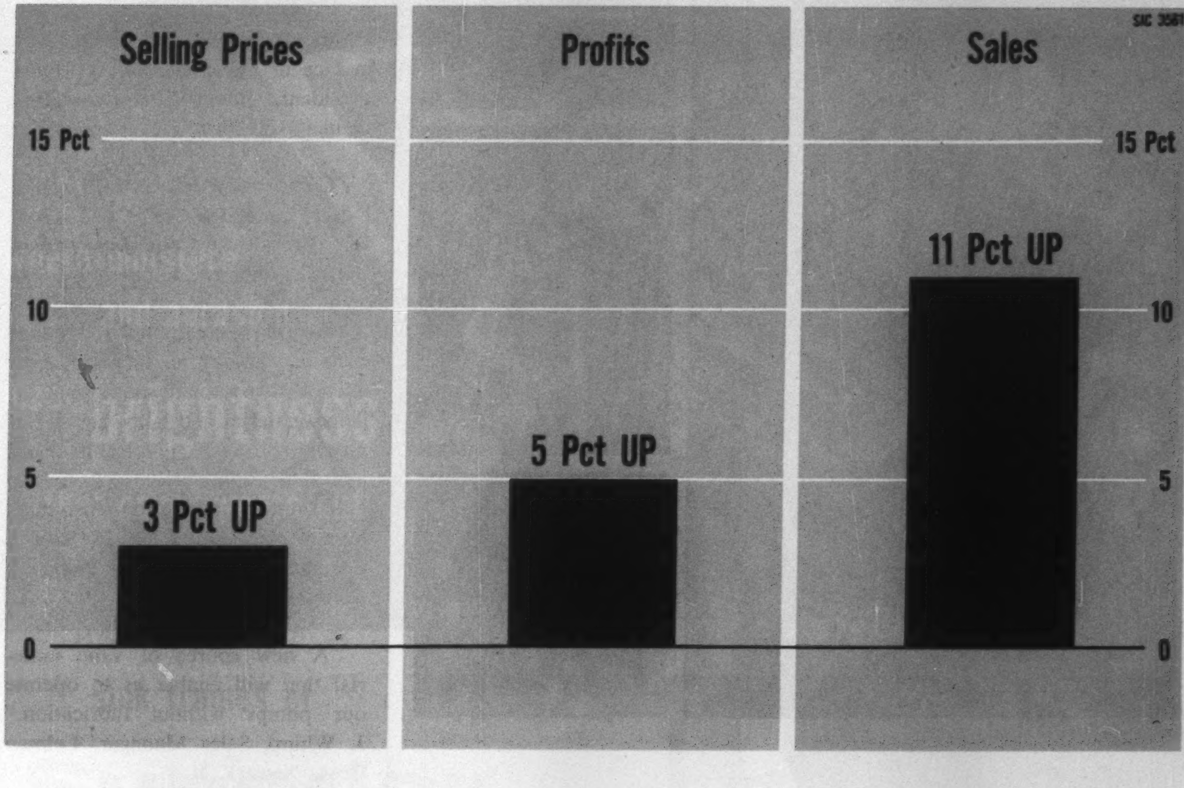
INVENTORIES: Raw Materials: LOWER

At End of 1959

Finished Goods: HIGHER

ORDER BACKLOGS: Average 65 Days — 18 Pct DOWN

It's Up to New Products to Increase Sales



dent, **Reda Pump Co.,** Bartlesville, Okla.

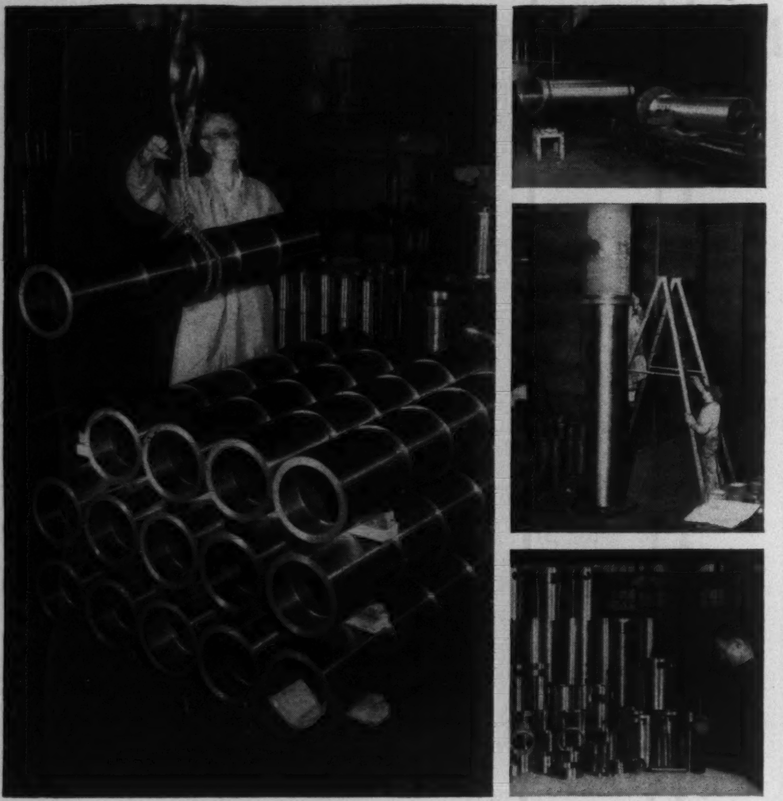
"Larger pumps for higher tonnage presses. Larger fluid power drives for steel and paper mill applications. What I believe to be the first major steel mill hydraulic drive will be installed in 1960. Optimism for additional drives in this field are already evident." M. E. Engebretson, Advertising Manager, **Oilgear Co.,** Milwaukee.

"The problem will be to make an adequate profit without material change in prices." J. S. Bennett, President, **Hale Fire Pump Co.,** Conshohocken, Pa.

"Automation, technical developments in proportioning and aircraft fueling will increase our sales. Trend to electrical and gas heating will adversely affect our sales." B. L. Gordon, President, **Blackmer Pump Co.,** Grand Rapids, Mich.

"The outcome of the steel negotiations, and copper strike. Particularly as it affects industry's ability to increase production efficiency. This is a very crucial battle for the progress of American industry." G. Wilfley, President, **A. R. Wilfley & Sons,** Denver.

Continued



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"Improved product quality, selling tools, training, and stable prices in face of higher costs." M. Irwin, President, **Quincy Compressor Co.,** Quincy, Ill.

"Competition will be tougher and I don't mean maybe!" C. M. Hoover, President, **Columbian Pump Co.,** Columbiana, Ohio.

"We are attempting to reduce costs and hoping for increased production to overcome additional inflated material and labor costs. Improving products and try to avoid increasing selling prices so as to help hold the line on inflation. Also meet foreign competition." E. R. Snovel, President, **Pennsylvania Pump & Compressor Co.,** Easton, Pa.

"A new source of vane material that will enable us to operate our pumps without lubrication." J. Whipp, Sales Manager, **Leiman Bros.,** Newark, N. J.

"Competition from other nations is a serious factor both here in U. S. and in our foreign shipments." G. T. Schurhan, General Manager, **Taber Pumps Co.,** Buffalo, N. Y.

"Our aircraft parts production may be affected to some extent by the change to missiles." E. M. Freeman, President, **Freeman Co.,** Yankton, S. D.

"We believe quality control is most important in this field." T. R. Ruthman, Vice President, **Ruthman Machinery Co.,** Cincinnati.

"Continuing rapid increase in the variety of applications of high vacuum to all phases of metallurgy. Constant pressure to provide furnaces which will attain higher temperatures—5000°F and higher." D. N. Reece, Manager, Steel Products Sales, **NRC Equipment Corp.,** Newton, Mass.

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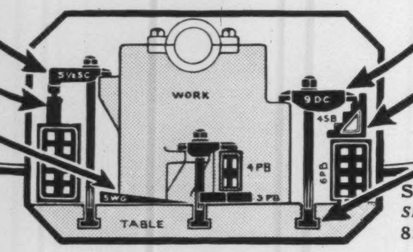

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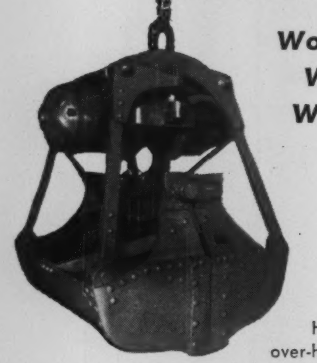

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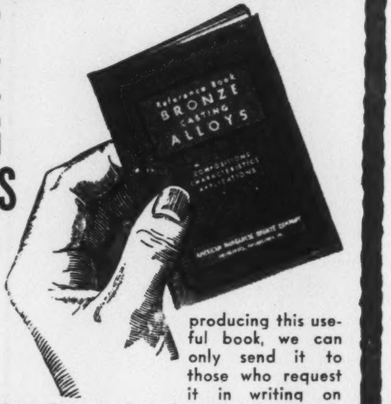

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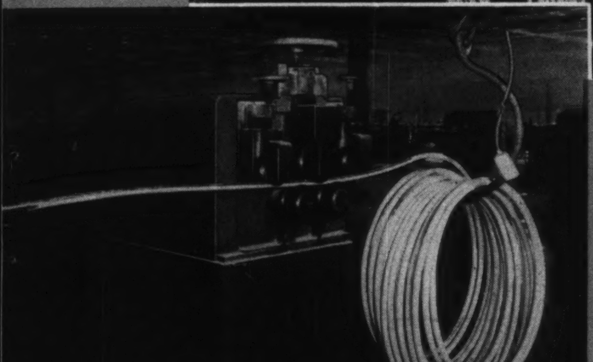

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At the beginning of the pre-drawing preparation cycle is the new Vaughn 3-roll straightener, where a section of the trolley-transported wire coil is mechanically straightened. This makes handling to pointer and die box an easy matter, contributing to the time and manpower savings that help boost production with modern Vaughn equipment. Details? Gladly, on request.

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Stamping Sales Will Rise in '60

Contract Stampers Expect 6 Pct Boost in Sales

As a group, contract stampers look forward to better sales and profits this year.

But industry has problems, including lack of raw materials and pressure on prices.

Stampers believe some price increases, possibly of around 2 pct, are likely.

▪ Contract stampers expect sales to increase about 6 pct this year. But they are concerned about supply problems (especially steel) and the effect of cost increases on prices.

While the Standard Industrial Classification (SIC 3461 "Metal Stampings") include captive shops, The IRON AGE surveyed contract stampers only so as to exclude companies where contract stamping may be only a small part of the total operation.

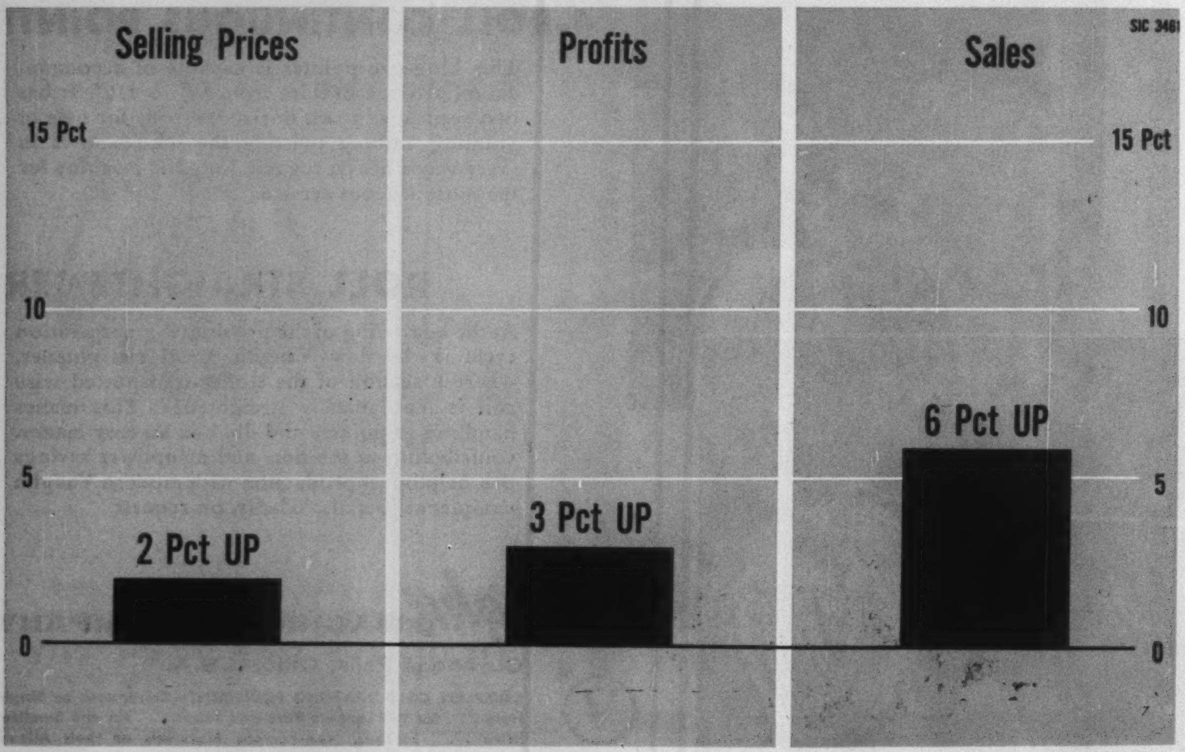
Backlogs Up—Backlogs have rebounded strongly from 1958 lows. At the end of 1959, the industry's backlog averaged 87 days, contrasted with a 60-day level the year before. This was an increase of 45 pct over year-end 1958.

Backlogs are weighted on the basis of plant employment so a large total of orders for a small plant will not distort the picture. Weighting is also applied to answers on inventories. But replies on sales, profits, etc., are unweighted individual replies.

Supply Worries — Almost without exception (see quotes on opposite page), stampers are worried about steel supplies. They feel shortages will hurt their efforts to meet buyers demands.

There is also concern about the

Competition Is Tough, But Stampers Are Hopeful



effect any steel price changes will have on stamping prices. The industry believes some price increases are inevitable this year. An increase averaging 2 pct is expected.

Under Study — Price pressure may be coming from an unexpected source: Quality control. Some stampers, while proud of the industry's standards in quality control, feel it may be overdone. Too much emphasis, they believe, will create a constant increase in the price of parts produced.

Other manufacturers are focusing attention on marketing efforts. Design, aimed at product improvement, is also getting attention.

SIC 3461

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: **Raw Materials:** **HIGHER**

↑
At End of 1959
↓

ORDER BACKLOGS: **Average 87 Days** **45 Pct UP**

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Availability of raw material in quantity to keep pace with demand, thereby stimulating a highly competitive market." C. J. Brumm, Manager of Sales, Stamping Div., **Transue & Williams Steel Forging Corp.,** Alliance, Ohio.

"A marketing problem would be created by a rise in the price of steel. Technically, we look forward to designing and making more shapes of comparatively simple stamped layers held together various ways (stacked stampings)." C. C. Higgins, President, **Worcester Pressed Steel Co.,** Worcester.

"Ability to obtain raw material consistently." W. B. Walker, Jr., President, **Walway Co.,** Detroit.

"Outcome of the steel strike and of negotiations between the union and the auto manufacturers." J. A. Jurist, President, **The Rober Tool Corp.,** Cleveland.

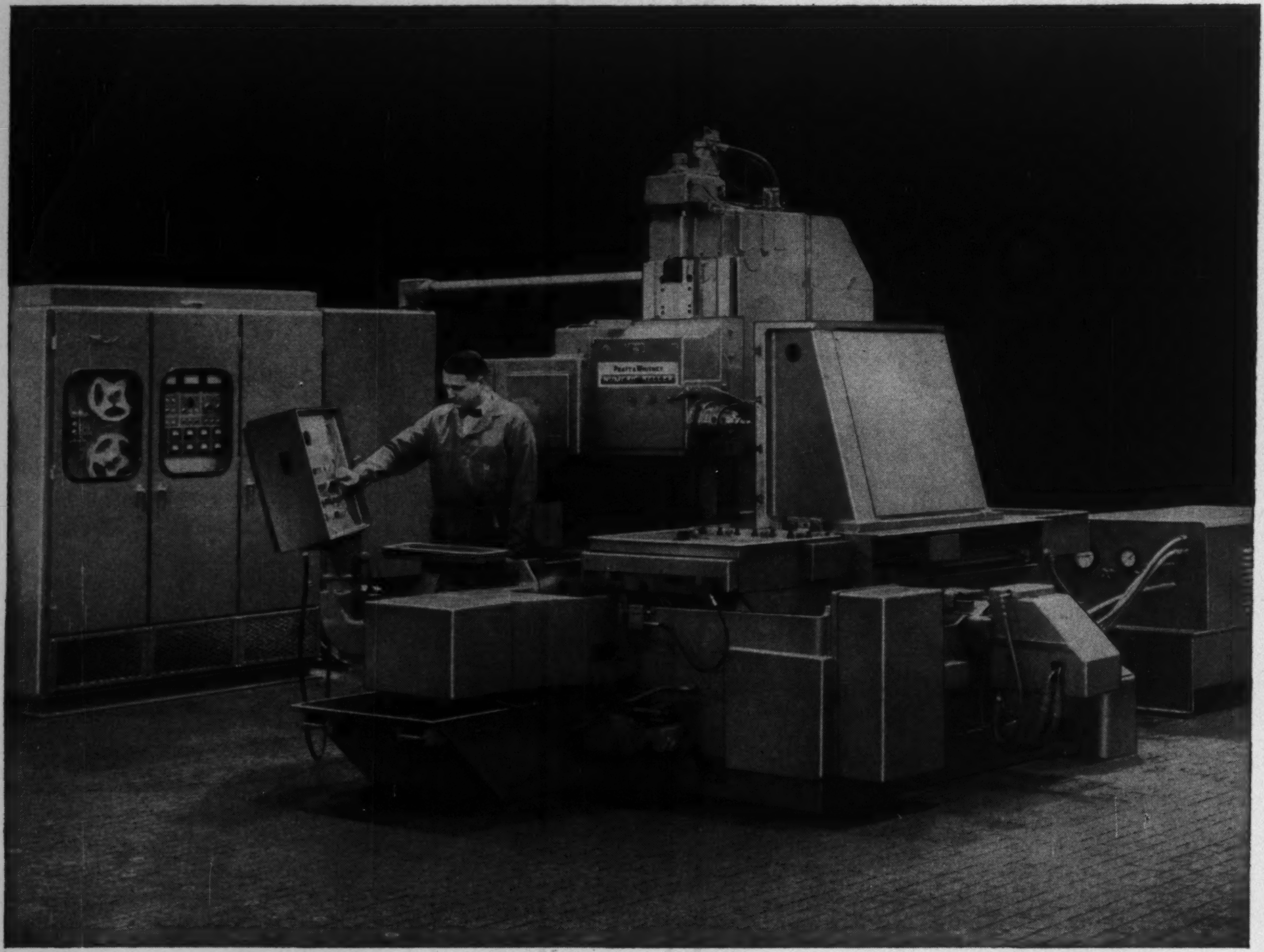
"Our marketing problem is primarily geographical. We have found that a personal direct mail program, highly selected and screened brought nearly a 70 pct return. Of that 70 pct, we sold half of them on their first inquiry. In some cases, we were competing against 10 to 15 other contract stamping manufacturers. Of the remaining half on the special list, we have their interest and I am certain that with proper sales interest and effort, we can develop most of these potential accounts." F. J. Loftus, Executive Vice President, **Res Mfg. Co.,** Milwaukee.

"Steel deliveries." B. Bolling, President, **Anderson - Bolling Mfg. Co.,** Grand Haven, Mich.

"Possible shortage of steel." J. W. Robinson, Sr., President, **Midwest Stamping & Mfg. Co.,** Bowling Green, Ohio.

"Use of captive shops." R. H. Serrick, Manager, **Defiance Stamping Co.,** Defiance, Ohio.

ACCURACY



PER-PIECE PRODUCTION TIME CUT 33% . . . by machining these aluminum computer housings on a Numeric-Keller. Each piece required 12 pockets milled and 72 holes drilled. Scrap loss to date: zero!

ONLY 21.5 HOURS . . . were needed to machine this complicated tool steel missile part on a Numeric-Keller. Machining involved 3 roughing and finishing contour cuts and 4 roughing and finishing pocket milling cuts.

3-DIMENSIONAL MILLING UNDER TAPE CONTROL. . . is demonstrated by this vision block for a super-modern military tank. Geometry is quite complex. Tape was prepared using both computer and hand computations.

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...PLUS REVOLUTIONARY ADVANCES IN MACHINING SPEED, EFFICIENCY and VERSATILITY with the new

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TOOLING COSTS and LEAD TIME CUT AS MUCH AS 75% . . . because the P&W Numeric-Keller is equipped for continuous-path milling under the direction of a tape-reading numerical control system. Models, templates and other costly, complicated tooling are eliminated!

EXTREME ACCURACY... with overall production easily held to ± .001". Piece-to-piece reproduction accurate to "tenths" is possible with controlled cutter selection.

UNUSUAL VERSATILITY . . . with more different types of jobs done faster and better. Short and long runs are handled with equal efficiency. Using tape, changeover is fast and easy, with minimum time lost between jobs.

MACHINE UTILIZATION IS GREATLY INCREASED . . . because more time is spent making chips, with less time needed for setup, fixturing and other non-productive operations. Similarly, man-hours are made more productive.

MACHINING TIME IS SLASHED... because tape control means maximum speeds and feeds programmed through all phases of the machining cycle. Optimum machining practice at all times also means finer surface finishes.

SEND NOW FOR THE CASE-HISTORY FACTS... that show how the P&W Numeric-Keller has saved *HOURS* of setup, tooling and machining time on dozens of jobs like the 3 examples shown on the facing page. See how this revolutionary machine can produce equally important savings on the toughest milling jobs in YOUR plant. Write today for your copy of Circular No. 624, that includes Job Analysis Sheets to give you the dollars-and-cents facts on Numeric-Keller savings. Pratt & Whitney Company, Inc., 10 Charter Oak Blvd., West Hartford, Connecticut.

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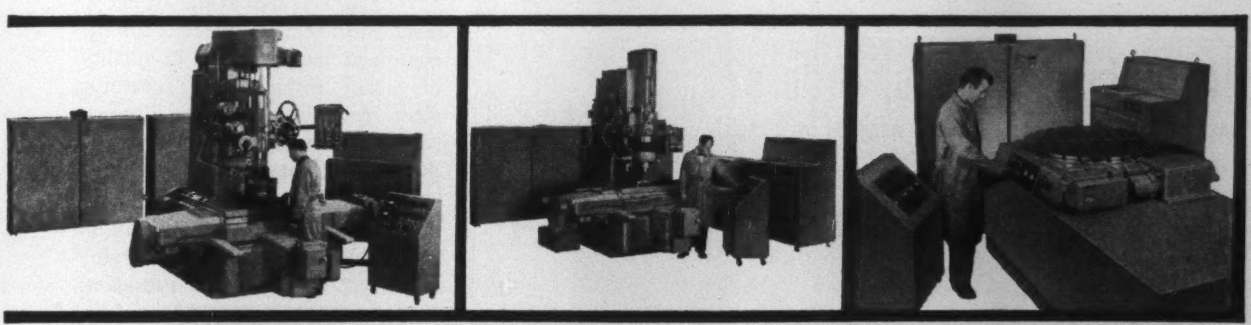


OTHER P&W NUMERICALLY CONTROLLED MACHINE TOOLS . . . include the Jig Borer, Vertical Precision Hole Grinder, and Precision Rotary Tables. Providing settings accurate to .0001", made automatically from data supplied by punched tape or operator keyboard, the Jig Borer and Hole Grinder combine toolroom precision with production-line speed and ease of operation. Equally efficient for short- or long-run production work. Ultimate in speed plus precision in circular spacing, graduating, and angular positioning, the Pratt & Whitney Numerically Controlled Rotary Table provides automatic settings accurate to 5 seconds of arc!

Steel Forging Sales to Climb

Steel Shortages Are the Big Problem

Shortages created by the steel strike will be the major problem facing the steel forging industry.

When shortages are overcome, manufacturers should have a good year in sales and profits.

▪ Steel shortages will be felt by most of the steel forging industry in the early months of 1960.

Raw material shortages were reported by 78 pct of the firms responding to the survey. Only 13 pct were able to report higher levels of inventories than they had at the end of 1958.

Sales, however, are expected to be eight pct over 1959, and estimates call for a seven pct rise in profits. Price increases are expected to be in the two pct range.

Greater Backlogs — Deliveries will be slower as order backlogs are 30 pct greater than a year ago. It will take about 91 days for deliveries, at least during the early part of the year. This is in comparison to 70 days at the end of 1958.

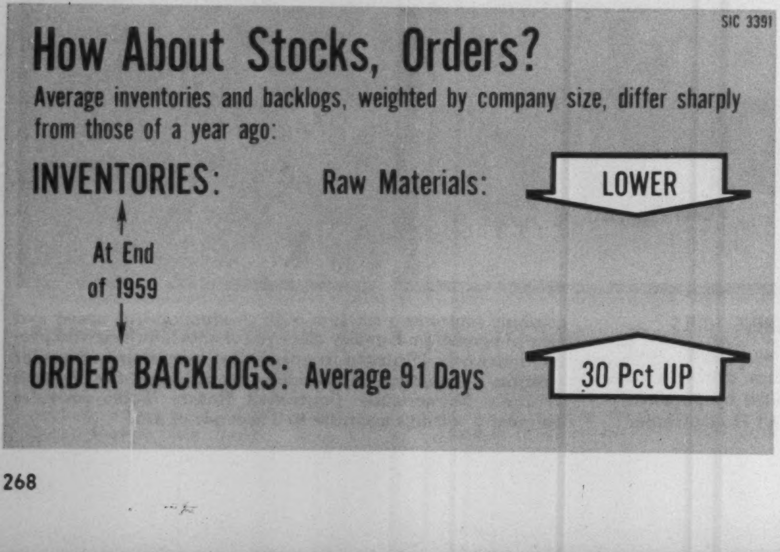
Another indication that steel will be the major problem confronting the industry is that manufacturers have few other problems in common. Other than steel, they list a wide variety of possible headaches, but no other factor stands out to affect the industry in general.

New Campaigns—As a means to higher sales and profits in 1960, some manufacturers plan to concentrate on greater sales promotion and advertising campaigns. This, they feel, will create better customer relations, create a greater steel forging market, and help to combat importation of foreign steel.

Others feel technological advances will lead to greater productivity at lower costs and increased profits. Many steel forgers maintain that stabilization of the dollar must come about to insure a good upward business trend.

Transportation Problem—However, one problem causing some concern in the industry is transportation. Manufacturers fear that increased rail and trucking rates will be a serious hinderence to sales. One says increased rates may tend to restrict purchases to plants nearest the user. Long distance sales may be cut drastically.

Increased production in the automotive, farm implement, heavy truck and tractor industries is anticipated by some steel forgers.



SIC 3391

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Halting the inflationary spiral." H. J. Flinn, Treasurer, **Brewer Titchener Corp.,** Cortland, N. Y.

"Greatest research and development effort will be directed toward continued improvement in quality of steam turbine and generator rotor forgings." H. C. Lackey, Manager, Forging Products, **U. S. Steel Corp.,** Pittsburgh.

"Poor cost-price relationship in the closed impression die forging industry." C. W. Stone, President, **Interstate Drop Forge Co.,** Milwaukee.

"Technical Development: Improvement in furnace design. Marketing Problem: Need for higher profits." E. J. Carlson, President, **Indiana Forge Machine Co.,** East Chicago, Ind.

"Let us all work together, and fight to stabilize the dollar." K. E. Walter, President, **Alliance Drop Forge Co.,** Alliance, Ohio.

"Removal of metal electronically —Elox process in making dies. It would help a lot if the Big Three automotive companies decided to purchase more forgings from the commercial forging industry and curtail the operation of their captive forged shops." B. C. Cox, President, **Melling Forging Co.,** Lansing, Mich.

Westinghouse Photo

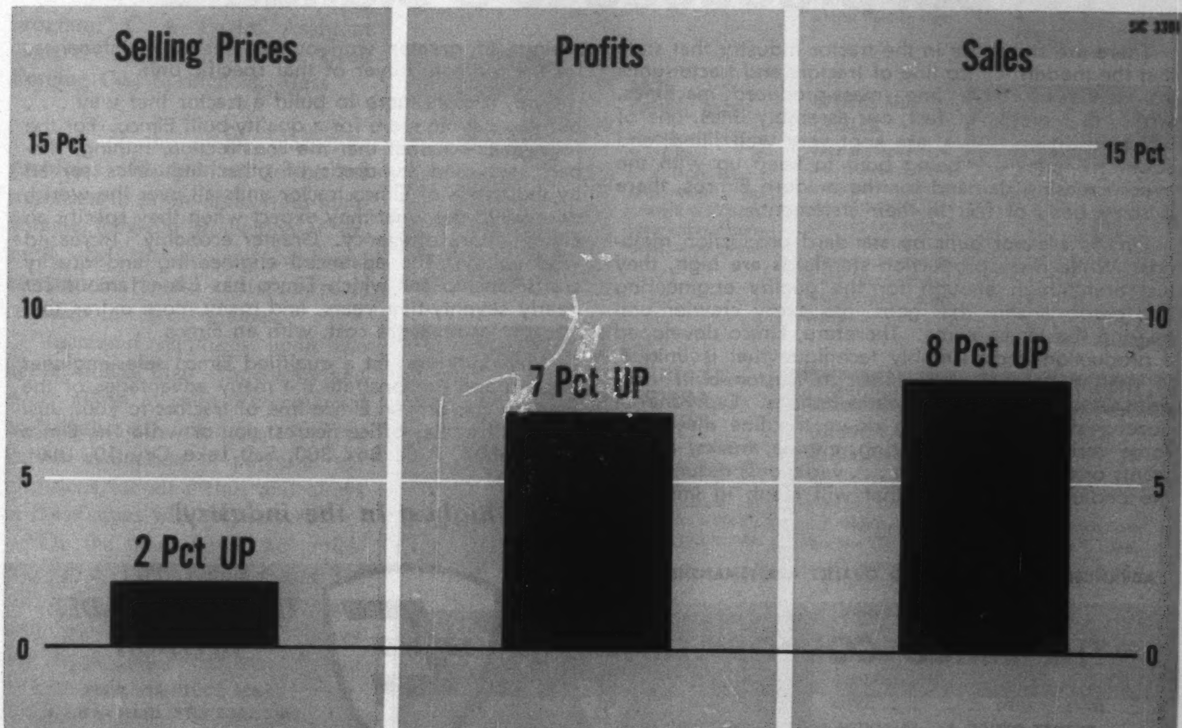
"Advancement of education in forging technology." E. W. Cress, President, **Buchanan Steel Products Corp.,** Buchanan, Mich.

"High velocity forming and better quality steel through vacuum melting." C. M. Larson, Sales Manager, **Chas. E. Larson Sons, Inc.,** Chicago.

"Settlement of the strike or of the negotiations in the steel and railroads industries." R. T. Reilly, President, **Conley Frog & Switch**

Continued

A Healthy Pickup in Sales and Profits



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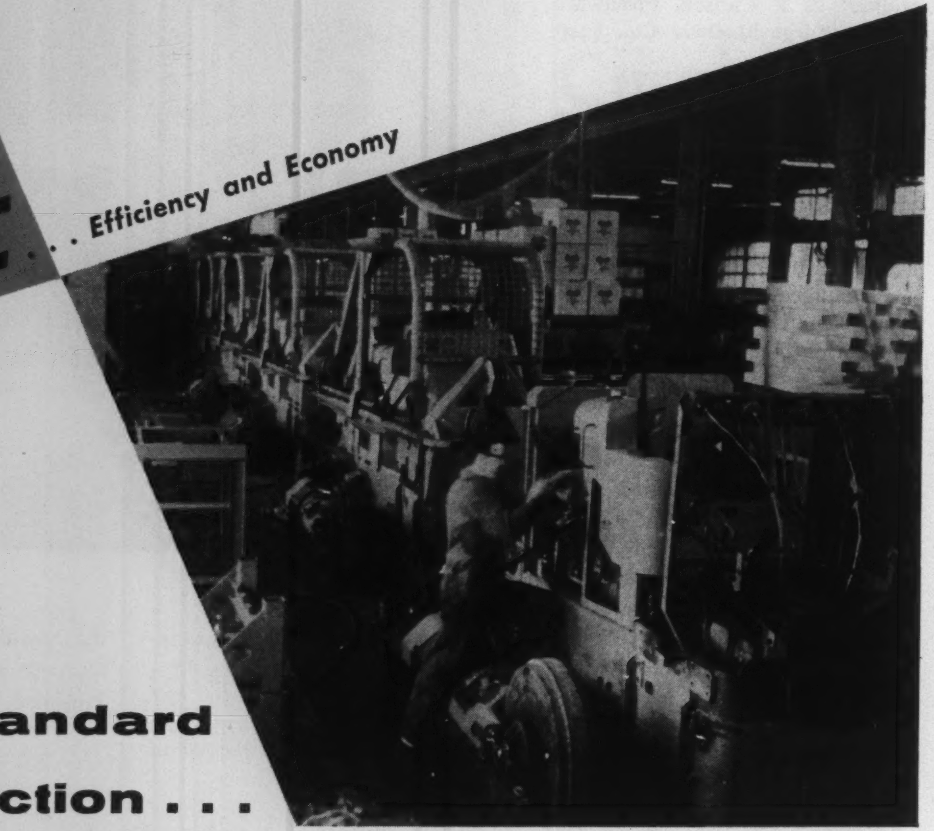

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Co., Memphis, Tenn.

"The possibility of lagging sales on the standard size cars due to the introduction of the American bantam size cars. At the present time, we do not have our normal share of this work." H. L. Heller, Vice President, **Malloy Mfg. Co.,** Detroit.

"Since we are dependent on the railroads, a realistic approach to solving obvious and acute car shortages in 1960 by the railroads will create a large volume of business with a sound economic purpose." F. M. Schaefer, President, **Schaefer Equipment Co.,** Pittsburgh, Pa.

"Consumable electric melting and vacuum degassing." D. G. R. Brigg, General Sales Manager, **Midvale-Heppenstall Co.,** Philadelphia.

"The ability to forge larger more complicated shapes from the super metals—which will make a most important contribution to our space program." C. A. Eagles, Assistant General Manager, **Storms Drop Forging Co.,** Springfield, Mass.

"One of the major marketing problems will continue to be the transition in prime areas from high-volume, long-run production of aircraft, gas turbine and air-frame components to the customer parts required in lower volumes.

"Increased emphasis upon the application of high temperature and super alloys to critical commercial and industrial markets, and a keener evaluation of potential applications for all metals and alloys in these areas will be pursued.

"On the other hand, we anticipate that 1960 requirements for our commercial products in the automotive farm implement, heavy duty truck and tractor markets will be better than 1959." J. R. Carter, General Manager, **Wyman-Gordon Co., Eastern Division,** Worcester.

PRECISION PRODUCTION PROBLEMS?

Here's help from Bausch & Lomb

in
TOOL DESIGN
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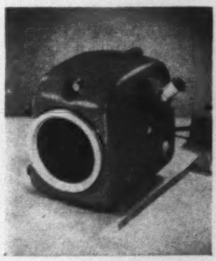
FABRICATION
MEASURING
TESTING



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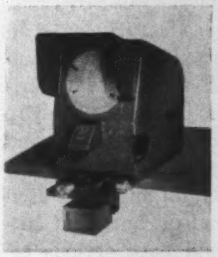
Accurately measures small changes in angle over a range of 30 seconds of arc (±15 seconds). Easy direct scale readings to 0.2 seconds (0.000006").



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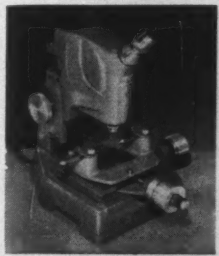

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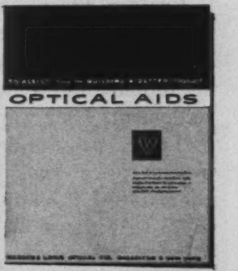

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SINCE 1853

Steel Foundries See Good Year

Most Customers Are Hoping for the Best

If the steel issue is settled and their customers are able to get into production, steel foundries will have a good year in 1960.

They are hoping there will be no rise in steel costs in order to keep their own prices in line.

▪ Steel foundries expect to have a good sales and profit year in 1960. If the steel labor issue is settled they should have little trouble in realizing estimates they have set for the coming year.

During the last year, sales were well above 1958 and this trend should continue this year. Profits, too, took a good and steady upturn that helped erase the scars of the recession.

Eye on Steel — Steel foundrymen are closely watching the outcome of the steel negotiations and are hoping for a non-inflationary settlement. They want to keep costs as low as possible in order to hold a firm price line. In the face of competition from ductile iron and other casting industries, a firm price line at this time is very important.

By maintaining at least a fairly steady pricing level, sales are expected to rise about 12 pct in 1960, and profits about eight pct. Foundrymen say price increases this year should average about three pct.

Roadbuilding Important — Steel founders are also keeping their eye on highway construction programs. Many of their products are used in this type construction machine and cutbacks could affect them seriously. Another market they're watching is the development and expansion of pipe lines. A large amount of steel forgings are used in water, gas and oil lines and cutbacks here would have serious effects, too.

Publicizing new developments in the industry should help the marketing problem. This information is coming from the research department of the Steel Founders' Society and is being well accepted by the industry.

Process Expansion—Many members of the industry feel this will save time and money spent in doing their own research and spread knowledge on advantages gained by properly designing steel castings.

Greater application of vacuum melting and shell molding processes will be seen this year. This will bring prices, costs and productivity into a more even line.

Order backlogs were extended to 69 days at the end of last year. This is in comparison to 49 days at the end of 1958.

SIC 3323

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: HIGHER

At End of 1959

ORDER BACKLOGS: Average 69 Days 39 Pct UP

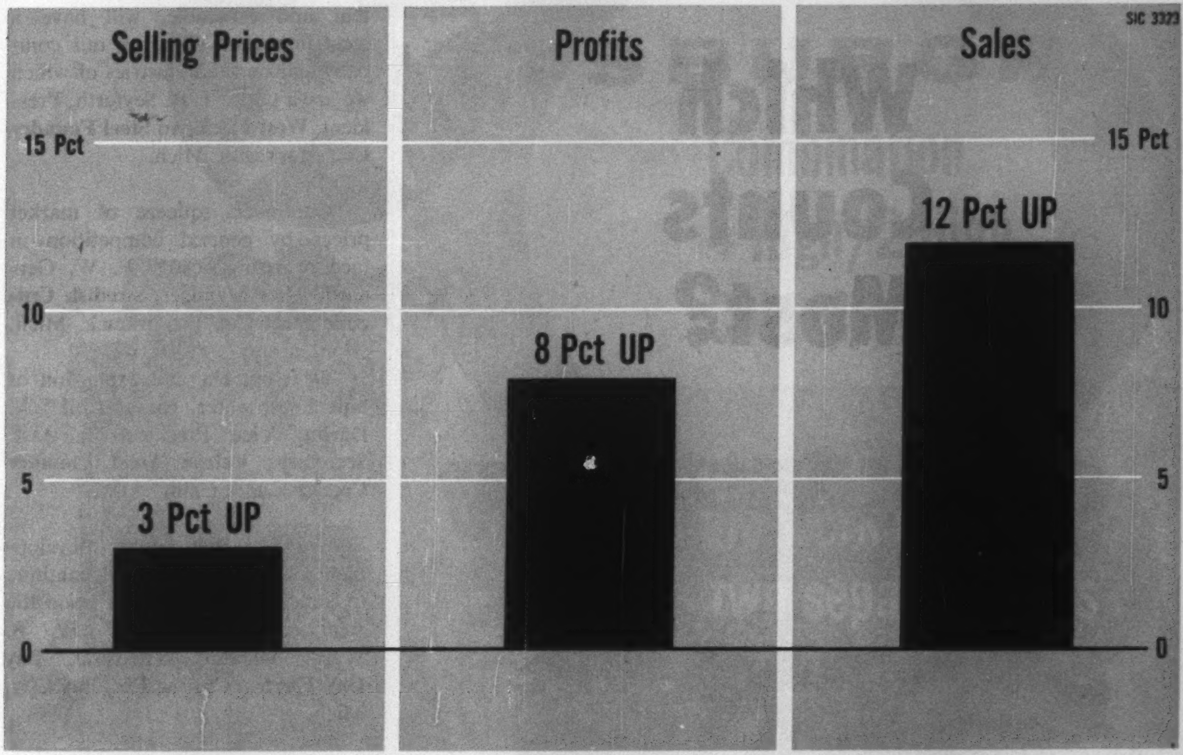
What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Settling of the steel strike on a non-inflationary basis along with contract changes to eliminate 'featherbedding' and wildcat strikes." J. L. Campbell, Vice President, Sales, **The Ohio Steel Foundry Co.,** Lima, Ohio.

"The tendency of the aircraft manufacturers to use precision castings made of steel is probably the most significant technical development in the future of our particular industry. Another development will be the substitution of ductile iron castings for many uses formerly of steel only. As to marketing problems, this industry will be again faced with increasing costs opposed to resistance to price increases." J.

With a Sharp Eye on Steel Negotiations



W. Cordes, Secretary - Treasurer, **Los Angeles Steel Casting Co.,** Los Angeles, Calif.

"We produce steel castings and transportation equipment. A significant percentage of our casting production goes to heavy earth moving equipment builders, and a major portion of our transportation equipment goes to the producers of trucks and trailers. The highway building program, therefore, its ex-

Continued

Wheelabrator Corp. Photo

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tent and timetable, will have a most important effect on our company and on the industries of which we are a part." J. R. Seyferth, President, **West Michigan Steel Foundry Co.,** Muskegon, Mich.

"Continued squeeze of market prices by general competition in face of rising costs." E. W. Gerhard, Sales Manager, **Swedish Crucible Steel Co.,** Hamtramck, Mich.

"Development and expansion of pipe lines; water, gas and oil." A. Darlin, Vice President & Asst. Secretary, **Vulcan Steel Foundry Co.,** Oakland, Calif.

"We feel that further development of ductile irons will continue to have an adverse effect upon the steel castings industry." W. B. Ward, Secretary - Treasurer, **Bay City Electric Casting Co.,** Bay City, Mich.

"The marketing problem will improve because of the continual release of information on casting design by both the research department of the steel founders' society and the foundry education foundation working in the engineering colleges with both students and professors on advantages gained by steel castings with proper design." C. P. Marguardren, Vice President & Treasurer, **Pacific Steel Casting Co.,** Berkeley, Calif.

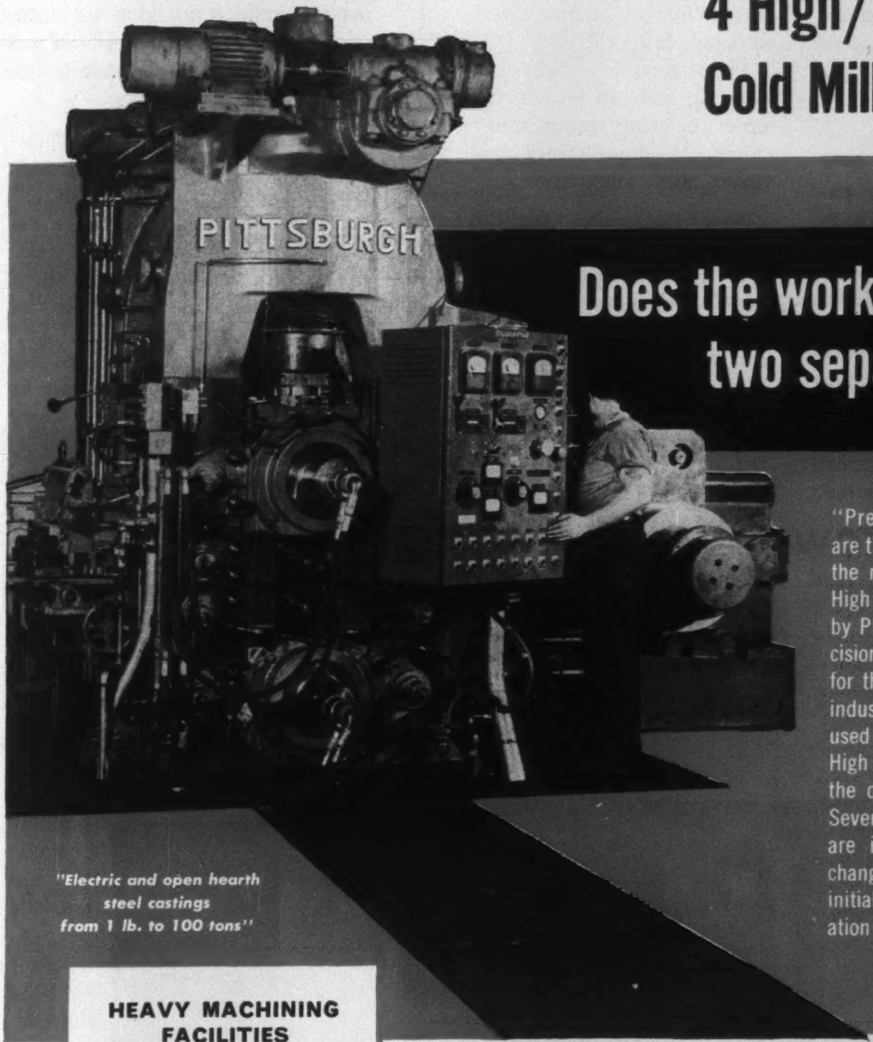
"Vacuum melting." E. Thys, President, **Thys Co.,** Sacramento.

"Shell molding." A. Davis, Asst. to President, **Electrocast Steel Foundry Co.,** Cicero, Ill.

"The buyers market will continue in 1960. Increases in prices of the large corporations will be accepted and the smaller companies will be encouraged not to raise prices." W. J. Shive, Vice President & Sales Manager, **Sterling Steel Casting Co.,** Monsanto, Ill.

PITTSBURGH

Combination 4 High/2 High Cold Mill . . .



Does the work of two separate mills

"Precision" and "Versatility" are the words that best describe the new combination 2 High/4 High Cold Mill designed and built by PITTSBURGH to secure precision gauge, temper and finish for the ferrous and non-ferrous industries. As a 4 High Mill, it is used for cold reducing; as a 2 High Mill, it is used to acquire the desired temper and finish. Several desirable design features are incorporated to keep roll change time to a minimum. Low initial cost and economical operation are attractive plus values.

"Electric and open hearth steel castings from 1 lb. to 100 tons"

HEAVY MACHINING FACILITIES

Our plant is equipped with a superior complement of well diversified machine tools that are available on a continuing basis for economical machining of heavy castings or the manufacture of auxiliary rolling mill equipment, such as heavy mill tables, furnace pushers, slab depilers, downcoilers, ingot buggies, slab transfers, etc.

PITTSBURGH
ENGINEERING & MACHINE DIVISION
Pittsburgh Steel Foundry Company
TEXTRON, INC.

BOX R, GLASSPORT, PENNSYLVANIA · PLANTS AT GLASSPORT & McKEESPORT, PA.

Outlook for Welding Brightens

New Products and Developments Mean Better Sales

New products, improved processes, and the trend to automation will help boost sales and profits.

And the auto industry's new small cars have helped spur developments that will benefit others.

▪ The manufacturers of welding equipment are counting on several developments to increase sales and profits in 1960: The continuing trend toward automation, and the introduction of smaller cars by the auto industry.

Labor costs in industry continue to go up and can best be offset by more efficient production techniques. In almost every case, this means more automation.

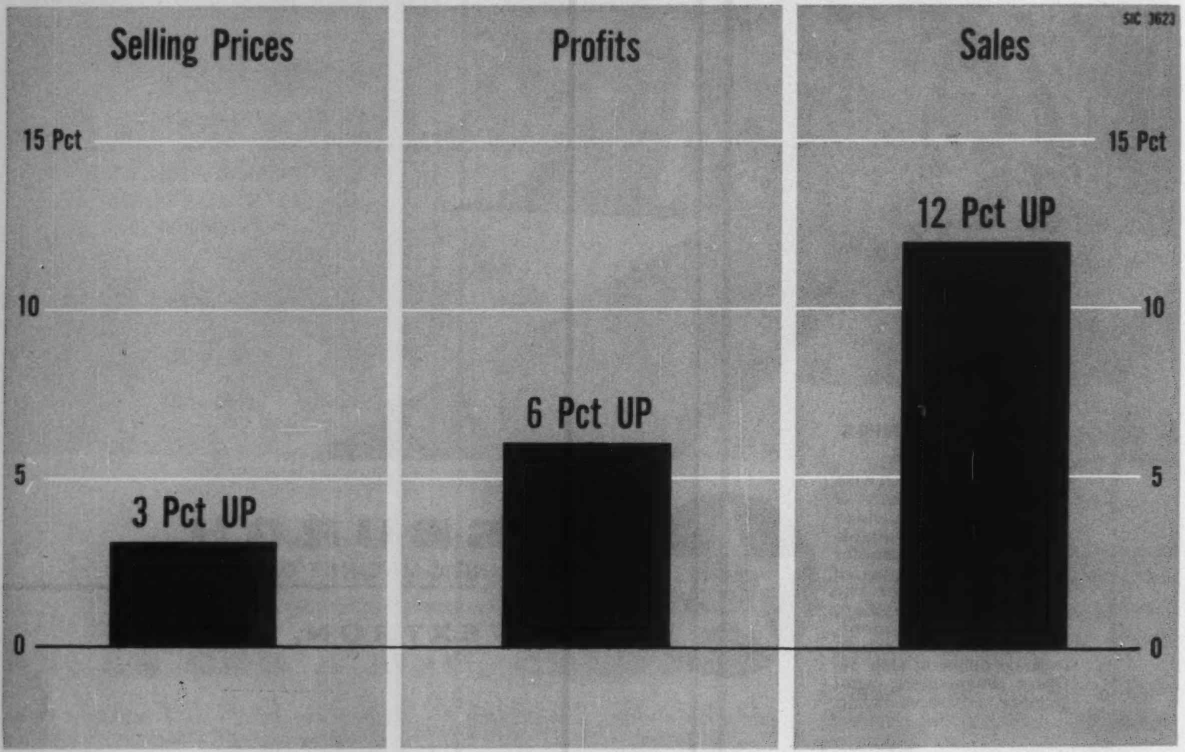
New Equipment Due — Each year, equipment makers have managed to come up with better and faster equipment, new materials, and new welding techniques. This year will be no exception.

Nearly 90 pct of the companies replying to this year's survey said they plan to introduce a new product this year. They look for basic improvements to metallic, inert gas shielded welding—particularly in the use of CO_2.

Small-Car Boom—New and improved arc-spot and burn-through types of equipment are also expected to be among the major developments. Improvements in welding rods for high temperature alloys and special alloys will also be made in the coming year.

The welding industry also sees the introduction of smaller cars by the auto industry as having a strong impact on their business. All of

Optimism Grows With Longer Backlogs



these new cars use a single welded structure for the frame and body. And the auto industry is planning to bring out more new small cars. In addition, it looks like it is only a matter of time before most of the larger cars will also be built with a single-welded structure.

Backlogs Climb—The small car programs have already forced welding equipment makers to find new and better ways of welding coated metals. These benefits are now available to other metalworkers.

With these developments in mind, the welding industry looks for sales to climb 12 pct above last year. Profits are expected to go up 6 pct. At the same time, it's warned that prices for welding equipment will likely go up 3 pct.

Prospects are already good that sales will at least hit the predicted level.

SIC 3623

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: LOWER

At End of 1959 Finished Goods: LOWER

ORDER BACKLOGS: Average 135 Days 165 Pct UP

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Advances in automatic welding, and expanded use of welding in industry." C. B. Abel, Vice President-Sales, **Miller Electric Mfg. Co.,** Appleton, Wis.

"Sales efficiency will be the key." J. F. Lincoln, Chairman, **Lincoln Electric Co.,** Cleveland.

"High labor costs can be offset best by automatic vs. manual manufacturing, or automation. We're in that business!" T. S. Long, President, **The Taylor-Winfield Corp.,** Warren, Ohio.

"More automation and continuous lines." R. N. Leitzel, Vice President & Treasurer, **Federal Machine & Welder Co.,** Warren, Ohio.

"Economic impact of strikes." M. H. Potter, Vice President, Sales, **Marquette Mfg. Co.,** Minneapolis.

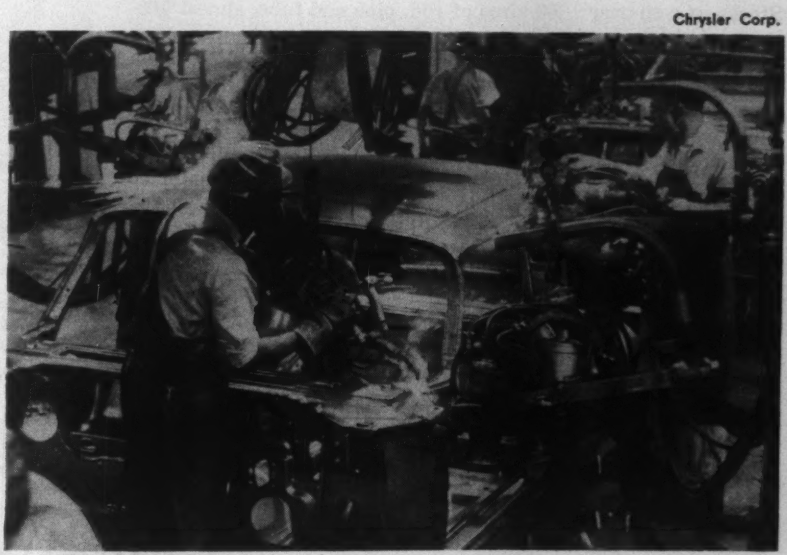
"We plan introduction of a new line of silicon rectifiers; new alloys of columbium metal; and new high temperature alloys." F. H. Driggs, President, **Fansteel Metallurgical Corp.,** North Chicago, Ill.

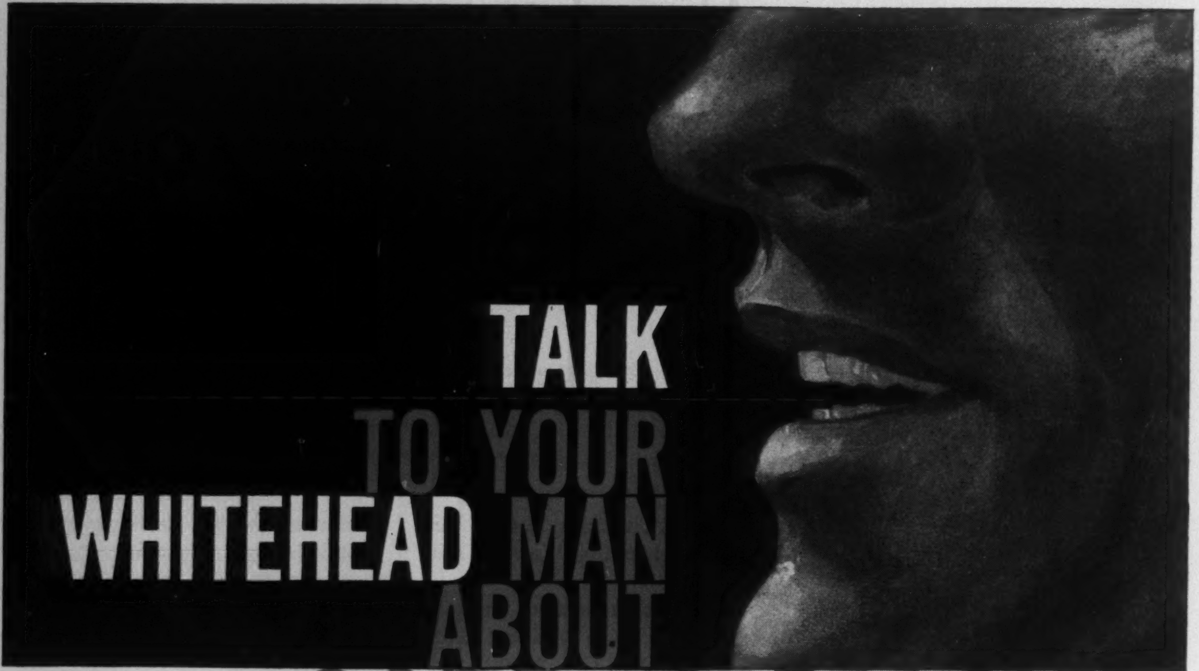
"Impact of steel strike settlement terms, regarding automation effects on employment, will determine industry's time table in adopting new highly automated equipment. The green light to reduce manpower and eliminate feather bedding where justified by mechanization will create a tremendous new market for our specialized automatic machinery. Reluctance on the part of labor to accept this inevitable transition at this time will mean a stretch out of the time table commensurate with savings realized by reduced labor costs." B. E. Long, President, **Cayuga Machine & Fabricating Co.,** Depew, N. Y.

"Basic improvements to metallic, inert gas shielded welding; particularly in use of CO_2. This, along with introduction of new and improved arc-spot and burn-through types of equipment will probably

Continued

Chrysler Corp.





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have the greatest effect on our industry during 1960. Plasma jet cutting, spray coating and even welding developments may have an important effect, but its adoption by industry will be somewhat slower in the form of commercially available product lines." R. C. Lipps, Manager, Welding Dept., **Westinghouse Electric Corp.,** Buffalo.

"The trend to mechanization will mean greater demand for fixture type equipment, less for standard items. The investment in more expensive fixtures will reduce operating costs for users of resistance welding. Another important trend is the growing use of coated steels, particularly in the automotive industry. While more durable, these materials are difficult to weld and we have had to develop new alloys for coated metal applications." W. K. Morga, Superintendent Welding Division, **Mallory Metallurgical Co.,** Indianapolis, Ind.

"We feel that our new 'micro wire' welding process will make a great impact on the metal working industry in 1960. This semi-automatic or fully-automatic process utilizes small diameter electrode wire operated at high current density in a CO_2 shielding atmosphere. High speed and high operating factors are easily attainable. Thin steels can now be welded that were previously unweldable with conventional electrodes. Automated production as well as job shop work can take full advantage of the Hobart 'Micro Wire' process." W. H. Hobart, Jr., Vice President **Hobart Brothers Co.,** Troy, Ohio.

"Nobody wants to buy a special machine that might not work right. Nobody wants to build one either.

"It's the buyer's choice—when he emphasizes price and delivery instead of engineering development, he's gambling his own profit." D. Sciaky, President, **Sciaky Bros., Inc.,** Chicago.

To avoid spray booth troubles

ask Oakite

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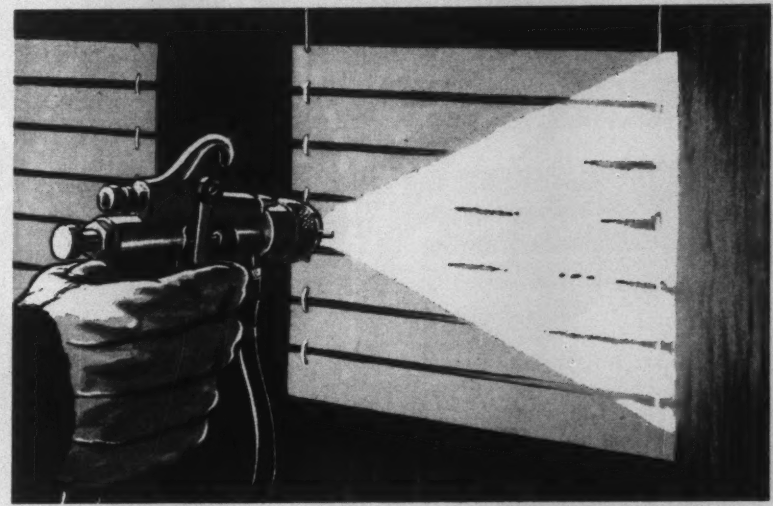

Oakite curtain water treatment takes the "tack" out of overspray

Just a few inexpensive ounces of the right Oakite additive in the spray booth water curtain save hours of clean-up time. The reason: Oakite chemicals surround each droplet of paint with an "anti-stick" film that keeps spray from adhering to walls, pumps, lines and water nozzles. Paint that doesn't settle or float immediately will still wash through the system—but it won't stick, won't clog the sprays. The result: a water curtain without gaps, a smooth running system, *no* unplanned downtime.

There's a full line of Oakite water additives . . . one to match any of the countless paints, enamels and organic coatings. The *right* one will help paint sink to the sump . . . or float to the surface for skimming off . . . or overcome special hard water troubles . . . or combat foaming problems. What's *your* problem? Ask the Oakite man to make free tests in your paint spray booth. They won't interfere with production. They may save you hours of spray booth downtime. Bulletin F-9443 tells more. Write Oakite Products, Inc., 28A Rector St., New York 6, N. Y.

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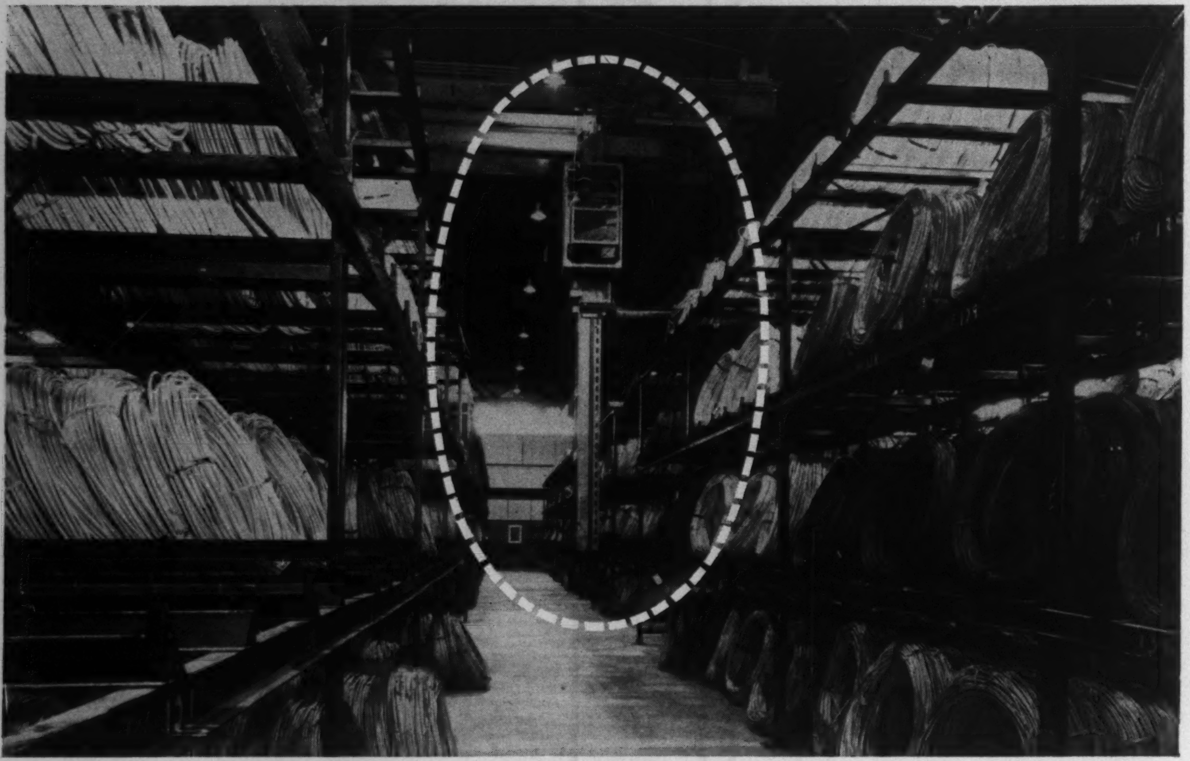


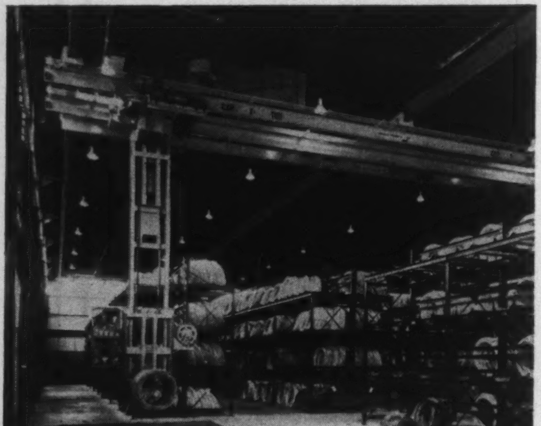
And Pay For Itself in Time and Labor Savings After It Goes to Work!

Considering an addition to your present storage facilities—or planning construction of a new warehouse building? A TRAK-RAK Crane can save you money by permitting a sharp reduction in the overall size of the addition or building . . . and still enable you to store the same volume or tonnage.

Hundreds of installations in warehouses and plants of every type are proof of the speed, efficiency, and economy of the TRAK-RAK System. A recent installation at Chandler Products Corporation, Cleveland, is a case in point.

> In an area of 20,000 sq. ft., 7500 coils (2,500,000 lbs.) are stored four high—using the floor and 3-tiered racks. The TRAK-RAK Crane handles the entire stock, from unloading coils at the rate of 1000 lbs. per minute from trucks, to moving them in and out of storage. Manpower savings of 70% . . . increased handling speed and safety . . . optimum rotation of stock . . . and a considerable reduction in warehousing costs are reported by the Company.

A TRAK-RAK Crane can be installed in your present warehouse area, enabling you to increase storage capacity, speed handling, and reduce costs. *Why not write for details now?*



TRAK-RAK Crane at truck unloading area. Unit unloads 1000 lbs. of coil stock per minute.

CTC CHICAGO TRAMRAIL CORPORATION

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CHICAGO 23, ILLINOIS

Estimated Steel Consumption 1959 and First Half '60

Special study introduces a new marketing tool for management.

Reports data by major 3-digit SIC metalworking industry groups. States covered account for 85 pct of total U. S. metalworking.

▪ Nearly all flat-rolled and bar steel require additional metalworking after leaving the mill or service center.

This working takes many forms: Stamping, welding, heat treating, washing, pickling, electroplating, grinding, polishing or buffing, painting, testing and many others.

Industries Differ — Further, the kind and degree of metalworking varies from industry to industry. The automotive industries, for example, have more stamping and electroplating operations than the machinery makers. The latter use more forging, heat treating and grinding.

So, in assessing the market potentials for metalworking it is important to know: (1) The size of the market tonnagewise; (2) the kind of steel products that are consumed by various industries, and (3) their location geographically.

Data Are Delayed — While the U. S. Bureau of the Census publishes much data on metals consumption gathered in the "Census of Manufacturers," the data are usually several years after the fact. The 1958 consumption figures are not yet available. Also, some of the census figures are withheld from the public by reason of their "confidential" nature—i.e., to avoid disclosure of information which might compromise any particular company's competitive position.

This series of tabulations show metalworking consumption of steel for 1959 in 15 states, with an estimate for the first half of 1960. The products covered all require additional metalworking before going into an end product for sale. There are other areas of steel consumption within these states—on-site construction, pipe lines, etc.—which are not shown.

No Single Source—The methods used in developing these tables involve use of information from many

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How to Use These Tables

The type of information presented in these tables is one of the most widely used marketing tools in the industrial field. It was last available in 1957 as a study financed by the steel industry, and was based on the 1954 Census of Manufactures.

This is an entirely new study along the same lines covering six major steel products in the 15 states that account for about 85 pct of the U. S. metalworking industry. It shows consumption of these products by Standard Industrial Classification (SIC).

Used in conjunction with The IRON AGE quarterly surveys of capital appropriations, it can provide an additional forecasting tool.

The 1959 data, along with the first half 1960 forecast, can be a valuable market planning tool.

How can you use these data? Here are some suggested steps:

▪ **1. Code your company sales volume by SIC.**

▪ **2. See what relationship exists between your sales to various industries (SIC) and consumption by these industries of the steel products shown here.**

▪ **3. If the relationship is a close one, the steel consumption data can be used to spread the anticipated sales volume by states.**

▪ **4. Since the data are forecast for 1960, companies finding a good 1959 correlation also can use it as a planning tool.**

This can be particularly valuable for companies who know their industry's sales volume on a national basis, but have no breakdown by geographic areas.

Also, companies selling a major part of their output through distributors must develop secondary indicators of sales potential to guide them in planning.

sources, plus application of simple statistical techniques.

An important data source is the American Iron and Steel Institute report showing direct mill shipments of steel products to various industries. This report (AIS-16) is issued quarterly and annually.

Census Data Help—A second source of useful data is the U. S. Bureau of the Census. These include metals consumption figures in the "Census of Manufacturers", the "Facts for Industry" series and other special publications.

A third valuable source of information is the large body of data published by trade and professional magazines, state directories and private surveys.

Computers Required—With the aid of the vast reservoir of data from the Census, AISI and other sources, the industrial configuration of each state is carefully coded, processed and recorded in detail on the most up-to-date electronic data processing devices.

As facts are reported for each industry, such as auto and appliance production, construction activities, etc., and these are correlated with actual material shipments figures reported by AISI and others. Again with the aid of electronic computers, material shipments are distributed among the various industries by SIC codes and by states.

Patterns Shift—Naturally, the actual end-item production and material shipments data are organized so as to reflect shifting patterns of consumption within each industry. These include both geographic and technological changes.

The tabulations of actual consumption during 1959 include steel receipts directly from mills, service centers and withdrawals from consumer inventories.

About the Estimates—The 1960 estimates are based on expected levels of production for each industry shown, provided the steel industry can supply enough steel to meet user needs.

Resumption of production by the mills will make this possible, but rebuilding of consumer inventories and service center stocks will continue.

About This Study

This survey was prepared especially for The IRON AGE by **Herman B. Director Associates, Inc., Washington.** The Director organization specializes in statistical and market planning data. Among its customers are some of the nation's principal metal producing and manufacturing concerns, including steel companies which account for more than 80 pct of total U. S. capacity.

CALIFORNIA Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES 1959 (Year)	CARBON PLATES 1960 (6 Mo.)	CARBON H.R. BARS 1959 (Year)	CARBON H.R. BARS 1960 (6 Mo.)	CARBON H.R. SHEET & STRIP 1959 (Year)	CARBON H.R. SHEET & STRIP 1960 (6 Mo.)	CARBON C.R. SHEET & STRIP 1959 (Year)	CARBON C.R. SHEET & STRIP 1960 (6 Mo.)	GALVANIZED SHEET 1959 (Year)	GALVANIZED SHEET 1960 (6 Mo.)	STAINLESS SHEET & STRIP 1959 (Year)	STAINLESS SHEET & STRIP 1960 (6 Mo.)
342	Cutlery, tools and hardware	495	297	5034	3024	14135	8481	23495	14097	4375	2625	559	335
343	Heating and plumbing equipment	2388	1194	1193	597	52641	26321	83465	41733	58997	29499	9[illegible]4	452
344	Structural metal products	171604	94382	54434	29939	71646	39405	58918	32405	59225	32574	3336	1835
346	Metal stamping and coating	1448	941	1176	764	20332	13216	36609	23796	2974	1933	2748	1786
3471	Lighting fixtures			1681	841	9595	4798	24051	12026	2088	1044	196	98
349	Metal products, n.e.c.	840	462	25464	14005	61282	33705	87596	48178	4992	2746	250	138
351	Engines and turbines	2010	1206	415	249	2191	1315	1417	850	186	112	31	19
352	Tractors and farm machinery	3827	2488	14547	9456	11143	7243	4540	2951	8066	5243	20	13
353	Construction and mining machinery	16647	10821	12162	7905	8275	5379	1232	801	145	94	32	21
354	Metalworking machinery	2867	1720	2446	1468	1560	936	1741	1045	154	92	22	13
355	Special-industry machinery, n.e.c.	3745	2247	8320	4992	4762	2857	3859	2315	2127	1276	1685	1011
356	General industrial machinery	20168	12101	8107	4864	18719	11231	12715	7629	4904	2942	852	511
357	Office and store machines	152	84	1934	1064	2045	1125	9759	5367	859	472	69	38
358	Service and household machines	4220	2448	2125	1233	8760	5081	30980	17968	6411	3718	995	577
359	Miscellaneous machinery parts	2471	1483	1695	1017	2670	1602	1608	965	178	107	211	127
361	Electrical industrial apparatus	6824	4094	8288	4973	12273	7364	31413	18848	2728	1637	238	143
3621	Electrical appliances					865	476	5306	2918	612	337	1270	699
3641	Engine electrical equipment												
366	Communication equipment	2366	1467	1172	727	1349	836	3375	2093	293	182	37	23
371	Motor vehicles and equipment	3339	2237	9608	6437	24086	16138	45015	30160	774	519	334	224
372	Aircraft and parts	1981	991	2965	1483	12055	6028	5249	2625	4342	2171	359	180
373	Ships and boats	48825	29295	3838	2303	1533	920	564	338	1247	748	245	147
374	Railroad equipment	200	130	21	14	24	16	6	4	4	3		
3751	Motorcycles and bicycles	28	17	189	113	141	85	1036	622	90	54	32	19
	TOTAL CALIFORNIA	296445	170105	166814	97468	342082	194558	473949	269734	165771	90128	14425	8409

CONNECTICUT Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	3227	1936	12607	7564	36436	21862	64975	38985	21569	12941	2898	1739
343	Heating and plumbing equipment	2594	1297	35	18	9602	4801	17750	8875	10550	5275	172	86
344	Structural metal products	15664	8615	11474	6311	4694	2582	4513	2482	4833	2658	150	83
346	Metal stamping and coating	61	40	725	471	10732	6976	22011	14307	3089	2008	469	305
3471	Lighting fixtures	128	64	183	92	1092	546	2737	1369	238	119	51	26
349	Metal products, n.e.c.	1115	613	27590	15175	13587	7473	9611	5286	117	64	247	156
351	Engines and turbines	1463	878	139	83	258	155	173	104	20	12	33	20
352	Tractors and farm machinery	253	164	920	598	322	209	139	90	232	151	1	1
353	Construction and mining machinery	951	618	707	460	41	27	6	4	1	1		
354	Metalworking machinery	12656	7594	7478	4487	8661	5197	9712	5827	846	508	218	131
355	Special-industry machinery, n.e.c.	5314	3188	2995	1797	2215	1329	3036	1822	1088	653	987	592
356	General industrial machinery	23875	14325	3151	1891	10305	6183	6910	4146	2329	1397	325	195
357	Office and store machines	243	134	1697	933	3989	2194	27464	15105	2389	1314	85	47
358	Service and household machines	1042	604	791	459	3259	1890	11909	6907	2320	1346	215	125
359	Miscellaneous machinery parts			4956	2974	14568	8741	8774	5264	973	584	389	233
361	Electrical industrial apparatus	3719	2231	4476	2686	8316	4990	20710	12426	1799	1079	117	70
3621	Electrical appliances	1162	639	2846	1565	8978	4938	59461	32704	6118	3365	1257	691
3641	Engine electrical equipment												
366	Communication equipment	365	226	264	164	465	288	1167	724	101	63	15	9
371	Motor vehicles and equipment	154	103	145	97	173	116	324	217	6	4		
372	Aircraft and parts	657	329	946	473	3634	1817	1583	792	1309	655	2679	1340
373	Ships and boats	12472	7483	793	476	113	68	42	25	92	55	13	8
374	Railroad equipment												
3751	Motorcycles and bicycles	23	14	31	19	47	28	343	206	30	18	8	5
	TOTAL CONNECTICUT	87138	51095	84949	48793	141487	82410	273350	157667	60049	34270	10329	5842

ILLINOIS Estimated consumption of six major steel-products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	697	418	18582	11149	30935	18561	49477	29686	12658	7595	652	391
343	Heating and plumbing equipment	17736	8868	962	481	40479	20240	67766	33883	45067	22534	1562	781
344	Structural metal products	146231	80427	58916	32404	78546	43200	68929	37911	77330	42532	2986	1642
346	Metal stamping and coating	9596	6237	10162	6605	92960	60424	146940	95511	15405	10013	6614	4299
3471	Lighting fixtures	1014	507	576	288	10586	5293	26536	13268	2304	1152	406	203
349	Metal products, n.e.c.	3352	1844	91762	50469	112709	61990	124222	68322	4969	2733	814	448
351	Engines and turbines	2535	1521	848	509	3374	2024	2130	1278	244	146	120	72
352	Tractors and farm machinery	118390	76954	247046	160580	134491	87419	59213	38488	66357	43132	201	131
353	Construction and mining machinery	56379	36646	30714	19964	9601	6241	1444	939	329	214	184	120
354	Metalworking machinery	17201	10321	9571	5743	12716	7630	14211	8527	1249	749	92	55
355	Special-industry machinery, n.e.c.	5757	3454	4991	2995	6623	3974	6097	3658	3715	2229	3183	1910
356	General industrial machinery	31684	19010	11957	7174	44079	26447	27555	16533	6131	3679	789	473
357	Office and store machines			2033	1118	4672	2570	9940	5467	916	504	141	78
358	Service and household machines	3420	1984	4545	2636	18998	11019	76947	44629	14208	8241	2126	1233
359	Miscellaneous machinery parts	7533	4520	7827	4696	8169	4901	4921	2953	546	328	1627	976
361	Electrical industrial apparatus	18834	11300	23037	13822	22505	13503	57243	34346	4970	2982	362	217
3621	Electrical appliances	224	123	2288	1258	4759	2617	30116	16564	3356	1846	4607	2534
3641	Engine electrical equipment	545	327	1651	991	735	441	1282	769	34	20	10	6
366	Communication equipment	4836	2998	5002	3101	19568	12132	48564	30110	4260	2641	212	131
371	Motor vehicles and equipment	9250	6198	36714	24598	115237	77209	215371	144299	3704	2482	1614	1081
372	Aircraft and parts	130	65	259	130	882	441	384	192	318	159	932	466
373	Ships and boats	4262	2557	205	123	24	14	9	5	20	12	6	4
374	Railroad equipment	100271	65176	45856	29806	34728	22573	2993	1945	7636	4963	140	91
3751	Motorcycles and bicycles	150	90	1130	678	941	565	6917	4150	600	360	472	283
	TOTAL ILLINOIS	560027	341545	616634	381318	808317	491428	1049207	633433	276326	161246	29852	17625

INDIANA

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	463	278	3658	2195	8687	5212	13236	7942	4448	2669	977	586
343	Heating and plumbing equipment	1842	921	1819	910	15485	7743	18626	9313	17852	8926	545	273
344	Structural metal products	94928	52210	32624	17943	35687	19628	32135	17674	34921	19207	1229	676
346	Metal stamping and coating	5703	3707	3018	1962	39462	25650	66686	43346	9249	6012	3379	2196
3471	Lighting fixtures	685	343	2132	1066	9016	4508	22602	11301	1962	981	257	129
349	Metal products, n.e.c.	882	485	31831	17507	2712	1492	2192	1206	159	87	82	45
351	Engines and turbines	1026	616	461	277	1947	1168	1247	748	155	93	52	31
352	Tractors and farm machinery	5115	3325	22368	14539	21288	13837	8478	5511	15618	10152	29	19
353	Construction and mining machinery	13735	8928	7592	4935	1948	1266	294	191	61	40		
354	Metalworking machinery	2592	1555	2361	1417	1280	768	1423	857	126	76	16	10
355	Special-industry machinery, n.e.c.	2930	1758	2091	1255	1238	743	1575	945	558	335	737	442
356	General industrial machinery	17583	10550	8521	5113	28361	17017	20409	12245	13201	7921	544	326
357	Office and store machines	9	5	52	29	172	95	342	188	31	17	4	2
358	Service and household machines	3313	1922	2041	1184	17008	9865	30947	17949	15815	9173	1482	860
359	Miscellaneous machinery parts	1248	749	877	526	2517	1510	1516	910	168	101	307	184
361	Electrical industrial apparatus	10527	6316	9003	5402	12536	7522	31103	18662	2701	1621	109	65
3621	Electrical appliances	33	18	244	134	349	192	1840	1012	277	152	111	61
3641	Engine electrical equipment	2028	1217	1998	1199	1174	704	2128	1277	226	136	6	4
366	Communication equipment	685	425	1220	756	3019	1872	7568	4692	657	407	42	26
371	Motor vehicles and equipment	16861	11297	170855	114473	231741	155266	433102	290178	43426	29095	5406	3622
372	Aircraft and parts	562	281	867	434	3516	1758	1531	766	1266	633	1458	729
373	Ships and boats	3317	1990	209	125	36	22	14	8	29	17	2	1
374	Railroad equipment	75016	48760	33001	21451	32926	21402	2605	1693	7321	4759		
3751	Motorcycles and bicycles	34	20	184	110	87	52	637	382	55	33	48	29
	TOTAL INDIANA	261117	157676	339027	214942	472192	299292	702241	448996	170282	102643	16822	10316

MARYLAND

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	5	3	78	47	161	97	231	139	98	59	52	31
343	Heating and plumbing equipment	703	352	142	71	2852	1426	3330	1665	3296	1648	207	104
344	Structural metal products	14322	7877	10226	5624	13365	7351	12612	6937	15249	8387	251	138
346	Metal stamping and coating	2218	1442	3095	2012	14871	9666	27432	17831	2553	1659	884	575
3471	Lighting fixtures												
349	Metal products, n.e.c.	48	26	1081	595	11991	6595	13668	7517	487	268	18	10
351	Engines and turbines												
352	Tractors and farm machinery	130	85	1279	831	318	207	215	140	180	117		
353	Construction and mining machinery	534	347	251	163	21	14	3	2				
354	Metalworking machinery	1109	665	590	354	456	274	509	305	44	26	3	2
355	Special-industry machinery, n.e.c.	2332	1399	1321	793	2156	1294	2038	1223	1234	740	890	534
356	General industrial machinery	1951	1171	565	339	2942	1765	2633	1580	3206	1924	251	151
357	Office and store machines	2	1	28	15	13	7	41	23	3	2	2	1
358	Service and household machines	129	75	102	59	506	293	892	517	429	249	72	42
359	Miscellaneous machinery parts	17	10	22	13	6	4	4	2			1	1
361	Electrical industrial apparatus	874	524	537	322	969	581	2061	1237	179	107	30	18
3621	Electrical appliances												
3641	Engine electrical equipment												
366	Communication equipment	1045	648	1955	1212	2262	1402	5671	3516	492	305	28	17
371	Motor vehicles and equipment	83	56	642	430	386	259	721	483	13	9		
372	Aircraft and parts	118	59	180	90	379	190	165	83	136	68	4	2
373	Ships and boats	27980	16788	2208	1325	937	562	344	206	762	457	184	110
374	Railroad equipment												
3751	Motorcycles and bicycles												
	TOTAL MARYLAND	53600	31528	24302	14295	54591	31987	72570	43406	28361	16025	2877	1736

MASSACHUSETTS Estimated consumption of six major steel products for 1959 and half of 1960

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES 1959 (Year)	CARBON PLATES 1960 (6 Mo.)	CARBON H.R. BARS 1959 (Year)	CARBON H.R. BARS 1960 (6 Mo.)	CARBON H.R. SHEET & STRIP 1959 (Year)	CARBON H.R. SHEET & STRIP 1960 (6 Mo.)	CARBON C.R. SHEET & STRIP 1959 (Year)	CARBON C.R. SHEET & STRIP 1960 (6 Mo.)	GALVANIZED SHEET 1959 (Year)	GALVANIZED SHEET 1960 (6 Mo.)	STAINLESS SHEET & STRIP 1959 (Year)	STAINLESS SHEET & STRIP 1960 (6 Mo.)
342	Cutlery, tools and hardware	2541	1525	14924	8954	18624	11174	37062	22237	5304	3182	2170	1302
343	Heating and plumbing equipment	1194	597	206	103	4412	2206	8009	4005	4861	2431	76	38
344	Structural metal products	47045	25875	14395	7917	26142	14378	23525	12939	16833	9258	929	511
346	Metal stamping and coating	1029	669	5215	3390	17100	11115	36186	23521	3552	2309	915	595
3471	Lighting fixtures			1069	535	5969	2985	14963	7482	1299	650	102	51
349	Metal products, n.e.c.	1255	690	30785	16932	7348	4041	3992	2196	131	72	287	158
351	Engines and turbines	4097	2458	1560	936	296	178	484	290	54	32	220	132
352	Tractors and farm machinery	372	242	1267	824	647	421	336	218	402	261		
353	Construction and mining machinery	4034	2622	1877	1220	504	328	74	48	18	12	3	2
354	Metalworking machinery	6935	4161	5590	3354	3463	2078	3936	2362	332	199	125	75
355	Special-industry machinery, n.e.c.	9730	5838	9719	5831	4836	2902	7932	4759	1954	1172	2336	1402
356	General industrial machinery	8197	4918	3578	2147	10093	6056	6542	3925	1030	618	202	121
357	Office and store machines	20	11	160	88	307	169	1815	998	158	87	8	4
358	Service and household machines	3157	1831	1631	946	15599	9047	42847	24851	12070	7001	475	276
359	Miscellaneous machinery parts	1409	845	1209	725	571	343	344	206	38	23	439	263
361	Electrical industrial apparatus	9041	5425	7998	4799	17350	10410	45116	27070	3907	2344	164	98
3621	Electrical appliances	15	8	87	48	237	130	1531	842	165	91	28	15
3641	Engine electrical equipment			703	422	465	279	839	503	22	13	10	6
366	Communication equipment	271	168	2000	1240	2513	1558	6194	3840	547	339	129	80
371	Motor vehicles and equipment	901	604	1003	672	2792	1871	5219	3497	82	55	4	3
372	Aircraft and parts	78	39	92	46	383	192	168	84	139	70	471	236
373	Ships and boats	30807	18484	2349	1409	849	509	312	187	691	415	118	71
374	Railroad equipment	3208	2085	1248	811	1010	657	80	52	225	146	3	2
3751	Motorcycles and bicycles	213	128	841	505	935	561	6878	4127	597	358	158	95
	TOTAL MASSACHUSETTS	135549	79223	109506	63854	142445	83588	254384	150239	54411	31138	9372	5536

MICHIGAN Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES 1959 (Year)	CARBON PLATES 1960 (6 Mo.)	CARBON H.R. BARS 1959 (Year)	CARBON H.R. BARS 1960 (6 Mo.)	CARBON H.R. SHEET & STRIP 1959 (Year)	CARBON H.R. SHEET & STRIP 1960 (6 Mo.)	CARBON C.R. SHEET & STRIP 1959 (Year)	CARBON C.R. SHEET & STRIP 1960 (6 Mo.)	GALVANIZED SHEET 1959 (Year)	GALVANIZED SHEET 1960 (6 Mo.)	STAINLESS SHEET & STRIP 1959 (Year)	STAINLESS SHEET & STRIP 1960 (6 Mo.)
342	Cutlery, tools and hardware	1939	1163	21598	12959	69000	41400	101929	61157	39074	23444	4542	2725
343	Heating and plumbing equipment	4947	2474	1529	765	14739	7370	18206	9103	16949	8475	370	185
344	Structural metal products	90462	49754	53909	29650	61269	33698	53777	29577	63032	34668	3473	1910
346	Metal stamping and coating	13272	8627	15690	10199	125686	81696	217227	141198	19629	12759	25552	16609
3471	Lighting fixtures	124	62	381	191	1450	725	3634	1817	315	158	10	5
349	Metal products, n.e.c.	1609	885	65256	35891	10468	5757	6990	3845	239	131	371	204
351	Engines and turbines	6548	3929	2739	1643	6587	3952	4163	2498	489	293	130	78
352	Tractors and farm machinery	8785	5710	33256	21616	19029	12369	8798	5719	11922	7749	13	8
353	Construction and mining machinery	22322	14509	11787	7662	3134	2037	474	308	100	65		
354	Metalworking machinery	34170	20502	21192	12715	22087	13252	24730	14838	2162	1297	175	105
355	Special-industry machinery, n.e.c.	5089	3053	4047	2428	3387	2032	3933	2360	1631	979	1235	741
356	General industrial machinery	70618	42371	18794	11276	45526	27316	32009	19205	10669	6401	494	296
357	Office and store machines	65	36	663	365	306	168	2251	1238	195	107	21	12
358	Service and household machines	4715	2735	6217	3606	24969	14482	76784	44539	22257	12909	650	377
359	Miscellaneous machinery parts	582	349	1891	1135	4910	2946	2955	1773	328	197	246	148
361	Electrical industrial apparatus	7146	4288	2976	1786	2613	1568	6053	3632	525	315	450	270
3621	Electrical appliances			434	239	895	492	4932	2713	677	372	109	60
3641	Engine electrical equipment	9544	5726	12138	7283	8839	5303	15614	9368	428	257	125	75
366	Communication equipment	123	76	204	126	287	178	719	446	62	38	1	1
371	Motor vehicles and equipment	170267	114079	680198	455733	1662530	1113895	3107134	2081780	53485	35835	28429	19047
372	Aircraft and parts	257	129	547	274	2025	1013	882	441	729	365	435	218
373	Ships and boats	15041	9025	658	395	64	38	23	14	53	32	5	3
374	Railroad equipment												
3751	Motorcycles and bicycles	17	10	83	50	47	28	347	208	30	18	15	9
	TOTAL MICHIGAN	467642	289492	956187	617987	2089847	1371715	3693564	2437777	244980	146864	66851	43086

MINNESOTA

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	39	23	2356	1414	2311	1387	3890	2334	566	340	124	74
343	Heating and plumbing equipment	2	1	41	21	1624	812	3015	1508	1783	892	79	40
344	Structural metal products	20008	11004	10288	5658	10612	5837	10681	5875	11035	6069	280	154
346	Metal stamping and coating	449	292	886	576	6823	4435	13601	8841	1002	651	376	244
3471	Lighting fixtures	2	1	7	4	45	23	112	56	10	5		
349	Metal products, n.e.c.	43	24	1061	584	253	139	138	76	5	3	10	6
351	Engines and turbines	195	117	174	104	600	360	389	233	49	29	35	21
352	Tractors and farm machinery	10048	6531	24825	16136	21283	13834	8248	5361	14502	9426	43	28
353	Construction and mining machinery	12295	7992	6426	4177	2879	1871	434	282	96	62	101	66
354	Metalworking machinery	626	376	416	250	273	164	305	183	28	17	1	1
355	Special-industry machinery, n.e.c.	845	507	754	452	701	421	698	419	398	239	394	236
356	General industrial machinery	3411	2047	1429	857	4268	2561	2928	1757	1309	785	115	69
357	Office and store machines	62	34	810	446	669	368	4917	2704	426	234	62	34
358	Service and household machines	1870	1085	1223	709	11536	6691	38709	22451	9992	5795	1395	809
359	Miscellaneous machinery parts	91	55	82	49	70	42	42	25	5	3	29	17
361	Electrical industrial apparatus	1446	868	1223	734	2350	1410	5546	3328	482	289	20	12
3621	Electrical appliances	3	2	28	15	71	39	472	260	50	28	22	12
3641	Engine electrical equipment	47	28	308	185	119	71	210	126	6	4	2	1
366	Communication equipment	78	48	350	217	598	371	1492	925	131	81		
371	Motor vehicles and equipment	100	67	711	476	754	505	1409	944	23	15		
372	Aircraft and parts	4	2	10	5	54	27	24	12	20	10		
373	Ships and boats	1157	694	93	56	21	13	8	5	17	10		
374	Railroad equipment	7624	4956	3687	2397	3441	2237	272	177	765	497	12	8
3751	Motorcycles and bicycles												
	TOTAL MINNESOTA	60445	36754	57188	35522	71355	43618	97540	57882	42700	25484	3100	1832

MISSOURI

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	226	136	4254	2552	4177	2506	7078	4247	869	521	258	155
343	Heating and plumbing equipment	1013	507	451	226	3934	1967	6603	3302	4378	2189	236	118
344	Structural metal products	56974	31336	17830	9807	32695	17982	29793	16386	32912	18101	1378	758
346	Metal stamping and coating	455	296	719	467	4241	2757	8457	5497	865	562	1019	662
3471	Lighting fixtures			262	131	1196	598	2997	1499	260	130		
349	Metal products, n.e.c.	77	42	2545	1400	8035	4419	12761	7019	824	453	30	17
351	Engines and turbines	51	31	106	64	414	248	258	155	34	20	9	5
352	Tractors and farm machinery	837	544	3191	2074	4031	2620	1698	1104	2907	1890		
353	Construction and mining machinery	3980	2587	2685	1745	1365	887	205	133	31	20	7	5
354	Metalworking machinery	468	281	415	249	502	301	561	337	49	29	3	2
355	Special-industry machinery, n.e.c.	386	232	568	341	806	484	689	413	474	284	493	296
356	General industrial machinery	714	428	1686	1012	3372	2023	2300	1380	1324	794	56	34
357	Office and store machines	10	6	202	111	205	113	1506	828	131	72	20	11
358	Service and household machines	1524	884	1861	1079	7657	4441	21189	12290	6300	3654	657	381
359	Miscellaneous machinery parts	101	61	265	158	195	117	118	71	13	8	38	23
361	Electrical industrial apparatus	4422	2653	4327	2596	8163	4898	20363	12218	1768	1061	95	57
3621	Electrical appliances			449	247	831	457	5298	2914	583	321	328	180
3641	Engine electrical equipment	51	31	330	198	209	125	374	224	10	6	3	2
366	Communication equipment	59	37	122	76	199	123	493	306	43	27	19	12
371	Motor vehicles and equipment	1874	1256	7431	4979	19732	13220	36877	24708	633	424	194	130
372	Aircraft and parts	191	96	281	141	1183	592	516	258	427	214	590	295
373	Ships and boats	3540	2124	302	181	90	54	34	20	73	44	16	10
374	Railroad equipment	35581	23128	16848	10951	16196	10527	1281	833	3601	2341	51	33
3751	Motorcycles and bicycles	11	7	55	33	44	26	325	195	28	17	27	16
	TOTAL MISSOURI	112545	66703	67185	40818	119472	71485	161774	96337	58537	33182	5527	3202

NEW JERSEY Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	975	585	8490	5094	30982	18589	55452	33271	19054	11432	3686	2212
343	Heating and plumbing equipment	2924	1462	363	182	12861	6431	21141	10571	14350	7175	568	284
344	Structural metal products	80660	44363	32028	17615	48506	26678	40394	22217	34354	18895	1561	859
346	Metal stamping and coating	1812	1178	1071	696	14894	9681	30498	19824	3049	1982	358	233
3471	Lighting fixtures			738	369	3967	1984	9945	4973	863	432	198	99
349	Metal products, n.e.c.	884	486	23531	12942	36279	19953	54475	29961	3464	1905	243	134
351	Engines and turbines	5761	3457	940	564	131	79	255	153	26	16	124	74
352	Tractors and farm machinery	521	339	2148	1396	1924	1251	784	510	1402	911	3	2
353	Construction and mining machinery	11667	7584	6120	3978	2559	1663	385	250	86	56		
354	Metalworking machinery	2426	1456	1834	1100	1155	693	1267	760	111	67	23	14
355	Special-industry machinery, n.e.c.	6474	3884	4868	2921	1861	1117	3411	2047	665	399	829	497
356	General industrial machinery	31143	18686	9342	5605	20297	12178	13409	8045	2567	1540	1105	663
357	Office and store machines	55	30	719	395	1987	1093	11875	6531	1037	570	76	42
358	Service and household machines	2260	1311	1899	1101	9016	5229	29657	17201	7147	4145	1020	592
359	Miscellaneous machinery parts	2849	1709	2522	1513	6640	3984	4000	2400	443	266	339	203
361	Electrical industrial apparatus	10178	6107	8219	4931	19884	11930	50824	30494	4412	2647	409	245
3621	Electrical appliances	19	10	95	52	274	151	1757	966	194	107	78	43
3641	Engine electrical equipment	1024	614	1890	1134	1563	938	2777	1666	100	60	17	10
366	Communication equipment	2067	1282	8418	5219	12242	7590	30671	19016	2654	1645	252	156
371	Motor vehicles and equipment	1310	878	5109	3423	13954	9349	26078	17472	448	300	135	90
372	Aircraft and parts	538	269	836	418	3518	1759	1533	767	1268	634	1915	958
373	Ships and boats	36466	21880	2532	1519	529	317	195	117	431	259	123	74
374	Railroad equipment	4606	2994	1601	1041	1554	1010	125	81	343	223	6	4
3751	Motorcycles and bicycles												
	TOTAL NEW JERSEY	206619	120564	125313	73208	246577	143647	390908	229293	98468	55666	13068	7488

NEW YORK Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	600	360	12733	7640	12919	7751	23202	13921	4728	2837	3343	2006
343	Heating and plumbing equipment	13176	6588	4295	2148	33732	16866	51010	25505	38011	19006	562	281
344	Structural metal products	175095	96302	66653	36659	93574	51466	81898	45044	88435	48639	4267	2347
346	Metal stamping and coating	6588	4282	7614	4949	43867	28514	79646	51770	9412	6118	6451	4193
3471	Lighting fixtures	417	209	2083	1042	6224	3112	15601	7801	1354	677	380	190
349	Metal products, n.e.c.	933	513	26966	14831	23084	12696	26893	14791	1264	695	208	114
351	Engines and turbines	7115	4269	1444	866	2261	1357	1661	997	284	170	437	262
352	Tractors and farm machinery	3694	2401	15682	10193	14161	9205	5324	3461	10587	6882	20	13
353	Construction and mining machinery	5520	3588	3214	2089	489	318	73	47	17	11	3	2
354	Metalworking machinery	9674	5804	5451	3271	5924	3554	6615	3969	582	349	58	35
355	Special-industry machinery, n.e.c.	9401	5641	4614	2768	4887	2932	7208	4325	2358	1415	1951	1171
356	General industrial machinery	27129	16277	12249	7349	35963	21578	25227	15136	12988	7793	1118	671
357	Office and store machines	508	279	5823	3203	6242	3433	37977	20887	3314	1823	249	137
358	Service and household machines	7433	4311	3758	2180	27713	16074	84768	49165	21664	12565	1820	1056
359	Miscellaneous machinery parts	336	202	424	254	3923	2354	2363	1418	262	157	138	83
361	Electrical industrial apparatus	18337	11002	22184	13310	42283	25370	106687	64012	9260	5556	220	132
3621	Electrical appliances	343	189	1603	882	3957	2176	24308	13369	2890	1590	745	410
3641	Engine electrical equipment	250	150	2065	1239	873	524	1427	856	77	46	118	71
366	Communication equipment	1768	1096	1691	1048	4642	2878	10880	6746	1011	627	46	29
371	Motor vehicles and equipment	26546	17786	109013	73039	278654	186698	520785	348926	8958	6002	4758	3188
372	Aircraft and parts	821	411	1086	543	3620	1810	1576	788	1303	652	526	263
373	Ships and boats	40398	24239	3075	1845	671	403	247	148	546	328	123	74
374	Railroad equipment	58159	37803	25962	16875	24655	16026	1988	1292	5470	3556	75	49
3751	Motorcycles and bicycles			1109	665	1229	737	9038	5423	785	471	332	199
	TOTAL NEW YORK	414241	243702	340791	208888	675547	417832	1126402	699797	225560	127965	27948	16976

OHIO

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	1403	842	26956	16174	35378	21227	56814	34088	13548	8129	4636	2782
343	Heating and plumbing equipment	11801	5901	5633	2817	31060	15530	45334	22667	35138	17569	1888	944
344	Structural metal products	191385	105262	81183	44651	139226	76574	124997	68748	140068	77037	4865	2676
346	Metal stamping and coating	11860	7709	24118	15677	140133	91086	246190	160024	22943	14913	7712	5013
3471	Lighting fixtures	445	223	1162	581	5	3	12	6	1	1	245	123
349	Metal products, n.e.c.	3028	1665	91996	50598	106294	58462	130384	71711	6388	3513	722	397
351	Engines and turbines	871	523	515	309	950	570	594	356	71	43	107	64
352	Tractors and farm machinery	8215	5340	25931	16855	15127	9833	6928	4503	10417	6771	30	20
353	Construction and mining machinery	70937	46109	38604	25093	11762	7645	1780	1157	356	231	220	143
354	Metalworking machinery	35009	21005	16813	10088	14027	8416	15691	9415	1374	824	106	64
355	Special-industry machinery, n.e.c.	17492	10495	7125	4275	4123	2474	4998	2999	2243	1346	2467	1480
356	General industrial machinery	75221	45133	17247	10348	47543	28526	34091	20455	13202	7921	1337	802
357	Office and store machines	1081	595	1735	954	1363	750	8865	4876	772	425	276	152
358	Service and household machines	8276	4800	8848	5132	35176	20402	109701	63627	27784	16115	3379	1960
359	Miscellaneous machinery parts	1687	1012	5757	3454	16539	9923	9961	5977	1105	663	746	448
361	Electrical industrial apparatus	15086	9052	13650	8190	28595	17157	62224	37334	5411	3247	650	390
3621	Electrical appliances	603	332	4269	2348	7235	3979	44350	24393	5120	2816	2960	1628
3641	Engine electrical equipment	6916	4150	32480	19488	9982	5989	17830	10698	495	297	182	109
366	Communication equipment	87	54	595	369	1700	1054	4209	2610	370	229	22	14
371	Motor vehicles and equipment	43473	29127	135699	90918	431857	289331	807076	540741	13883	9302	8561	5736
372	Aircraft and parts	760	380	1319	660	5263	2632	2292	1146	1896	948	2792	1396
373	Ships and boats	10494	6296	481	289	44	26	16	10	36	22		
374	Railroad equipment	16994	11046	6532	4246	4745	3084	386	251	1051	683	19	12
3751	Motorcycles and bicycles	316	190	1556	934	1126	676	8282	4969	719	431	1033	620
	TOTAL OHIO	533440	317241	550204	334448	1089233	675349	1743005	1092761	304391	173476	44955	26973

PENNSYLVANIA

Estimated consumption of six major steel products for 1959 and half of 1960

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	729	437	15705	9423	11596	6958	16734	10040	5276	3166	1966	1180
343	Heating and plumbing equipment	10999	5500	949	475	32731	16366	40888	20444	37604	18802	693	347
344	Structural metal products	356172	195895	94208	51814	134064	73735	115656	63611	131454	72300	6024	3313
346	Metal stamping and coating	372	242	9010	5857	110092	71560	182754	118790	19246	12510	2939	1910
3471	Lighting fixtures	287	144	1109	555	7702	3851	19306	9653	1676	838		
349	Metal products, n.e.c.	1912	1052	132957	73126	47070	25889	55238	30381	2615	1438	421	232
351	Engines and turbines	18667	11200	4331	2599	1603	962	1648	989	223	134	824	494
352	Tractors and farm machinery	5890	3829	21661	14080	25855	16806	13493	8770	17057	11087	45	29
353	Construction and mining machinery	25035	16273	13908	9040	2674	1738	401	261	69	45	116	75
354	Metalworking machinery	5437	3262	4377	2626	1894	1136	2113	1268	186	112	11	7
355	Special-industry machinery, n.e.c.	3822	2293	7058	4235	2252	1351	3845	2307	977	586	2965	1779
356	General industrial machinery	15234	9140	8927	5356	26405	15843	17284	10370	5744	3446	1137	682
357	Office and store machines	8	4	106	58	185	102	471	259	43	24	20	11
358	Service and household machines	3480	2018	5605	3251	25489	14784	68857	39937	22396	12990	1293	750
359	Miscellaneous machinery parts	3848	2309	6804	4082	7038	4223	4238	2543	471	283	974	584
361	Electrical industrial apparatus	16558	9935	26978	16187	52352	31411	122226	73336	10621	6373	521	313
3621	Electrical appliances	46	25	427	235	640	352	3456	1901	495	272	1683	926
3641	Engine electrical equipment	1564	938	11781	7069	1251	751	2289	1373	52	31	53	32
366	Communication equipment	436	270	809	502	957	593	1905	1181	208	129	63	39
371	Motor vehicles and equipment	23894	16009	6674	4472	256942	172151	480196	321731	8259	5534	5785	3876
372	Aircraft and parts	416	208	576	288	2117	1059	922	461	763	382	921	461
373	Ships and boats	1323	794	213	128	26	16	10	6	21	13		
374	Railroad equipment	145760	94744	66350	43128	60986	39641	4919	3197	13529	8794	207	135
3751	Motorcycles and bicycles												
	TOTAL PENNSYLVANIA	641889	376521	440523	258586	811921	501278	1158849	722809	278985	159289	28661	1717

TEXAS Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	18	11	250	150	917	550	1349	809	481	289	193	116
343	Heating and plumbing equipment	96	48	56	28	4599	2300	5245	2623	5327	2664	470	235
344	Structural metal products	93762	51569	20675	11371	34478	18963	29873	16430	34346	18890	924	508
346	Metal stamping and coating	275	179	120	78	2177	1415	4808	3125	1011	657	221	144
3471	Lighting fixtures	93	47	154	77	696	348	1745	873	151	76	16	8
349	Metal products, n.e.c.	63	35	1560	858	23879	13133	39051	21478	2540	1397	52	29
351	Engines and turbines	18	11	4	2	14	8	8	5	1	1	1	1
352	Tractors and farm machinery	582	378	2971	1931	3395	2207	1349	877	2485	1615	9	6
353	Construction and mining machinery	18106	11769	30413	19768	21636	14063	3200	2080	226	147	43	28
354	Metalworking machinery	412	247	385	231	505	303	565	339	50	30	12	7
355	Special-industry machinery, n.e.c.	863	518	1763	1058	3783	2270	5531	3319	1283	770	645	387
356	General industrial machinery	2022	1213	1178	707	5431	3259	3583	2150	1521	913	155	93
357	Office and store machines												
358	Service and household machines	130	75	391	227	1218	706	8260	4791	751	436	796	462
359	Miscellaneous machinery parts	181	109	925	555	1422	853	856	514	94	56	150	90
361	Electrical industrial apparatus	369	221	390	234	464	278	1168	701	100	60	2	1
3621	Electrical appliances												
3641	Engine electrical equipment	16	10	95	57	93	56	161	97	5	3	2	1
366	Communication equipment	317	197	303	188	506	314	1269	787	110	68	7	4
371	Motor vehicles and equipment	424	284	1774	1189	5140	3444	9608	6437	163	109	38	25
372	Aircraft and parts	234	117	345	173	1459	730	636	318	526	263	26	13
373	Ships and boats	14539	8723	1164	698	515	309	188	113	418	251	103	62
374	Railroad equipment	82	53	11	7	16	10	2	1	3	2		
3751	Motorcycles and bicycles												
	TOTAL TEXAS	132602	75814	64927	39587	112343	65519	118455	67867	51592	28697	3865	2220

WISCONSIN Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

SIC CODE	CONSUMING INDUSTRY	CARBON PLATES		CARBON H.R. BARS		CARBON H.R. SHEET & STRIP		CARBON C.R. SHEET & STRIP		GALVANIZED SHEET		STAINLESS SHEET & STRIP	
		1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)	1959 (Year)	1960 (6 Mo.)
342	Cutlery, tools and hardware	45	27	3926	2356	23292	13975	41711	25027	2335	1401	570	342
343	Heating and plumbing equipment	515	258	1249	625	10250	5125	11142	5571	11915	5958	439	220
344	Structural metal products	95854	52720	19222	10572	31835	17509	28803	15842	31410	17276	1215	668
346	Metal stamping and coating	1283	834	4340	2821	107634	69962	198728	129173	7416	4820	8389	5453
3471	Lighting fixtures	109	55	368	184	3374	1687	8458	4229	734	367	28	14
349	Metal products, n.e.c.	235	129	5758	3167	1375	756	747	411	25	14	54	30
351	Engines and turbines	6901	4141	2610	1566	11018	6611	9131	5479	837	502	325	195
352	Tractors and farm machinery	34957	22722	72158	46903	38203	24832	15806	10274	18857	12257	26	17
353	Construction and mining machinery	55563	36116	29956	19471	12746	8285	1934	1257	399	259	231	150
354	Metalworking machinery	5977	3586	3684	2210	3107	1864	3469	2081	305	183	18	11
355	Special-industry machinery, n.e.c.	5804	3482	3531	2119	4168	2501	6446	3868	1976	1186	1877	1126
356	General industrial machinery	18919	11351	10684	6410	35841	21505	22670	13602	7550	4530	288	173
357	Office and store machines	3	2	27	15	33	18	241	133	21	12	2	1
358	Service and household machines	3074	1783	2917	1692	10292	5969	45464	26369	7324	4248	521	302
359	Miscellaneous machinery parts			158	95	234	140	141	85	16	10	95	57
361	Electrical industrial apparatus	7386	4432	6876	4126	10461	6277	29122	17473	2532	1519	209	125
3621	Electrical appliances			617	339	522	287	2972	1635	399	219	297	163
3641	Engine electrical equipment			1284	770	9891	5935	18358	11015	446	268	8	5
366	Communication equipment	29	18	55	34	189	117	473	293	41	25	1	1
371	Motor vehicles and equipment	20494	13731	92362	61883	91521	61319	171043	114599	4002	2681	1209	810
372	Aircraft and parts	1	1	2	1	9	5	4	2	3	2		
373	Ships and boats	19420	11652	1475	885	467	280	171	103	380	228	49	29
374	Railroad equipment												
3751	Motorcycles and bicycles	532	319	1260	756	1604	962	11797	7078	1024	614	328	197
	TOTAL WISCONSIN	277101	167359	264519	169000	408066	255921	628831	395599	99947	58579	16179	10089

How Ralph Hockett increased diamond wheel life 72%

If ever a man was a perfectionist, that man is Glenn Carr, General Foreman of the Tool Grinding Department at the Wichita Division of the Boeing Airplane Company. And, after fifteen years of working to the kind of tolerances required by the world's leading builder of superbombers, he tends to be skeptical of miraculous claims.

That's why Ralph Hockett of Bay State distributor Wichita Pump & Supply Co., didn't make much fuss about Bay State's new diamond wheels. He analyzed the problem in his usual fact-finding manner, submitted wheels for test and let them speak for themselves.

The result was an eye-opener. The pay-off was in wheel life. Against an average life of *125* hours previously, the new Bay State wheels averaged *215* hours per wheel!

One important factor contributing to this bonus wheel life was the use of Bay State's unique BA Resinoid bond.

The Bay State wheels were not only longer-lasting but they were more versatile, cooler cutting and gave a far superior finish. They are now, of course, a regular inventory item at Boeing, Wichita, where B-52 missile bombers are in production for the Air Force.

If you have a diamond-wheel grinding problem, you'll find that your Bay State representative, direct or distributor, is ready to supply the right wheel for the job with either natural or man-made diamond abrasive . . . and he may well be able to give you a significant improvement in performance, too. Better grinding at lower cost . . . that is his business.

BAY STATE ABRASIVES

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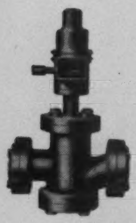
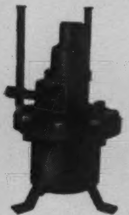
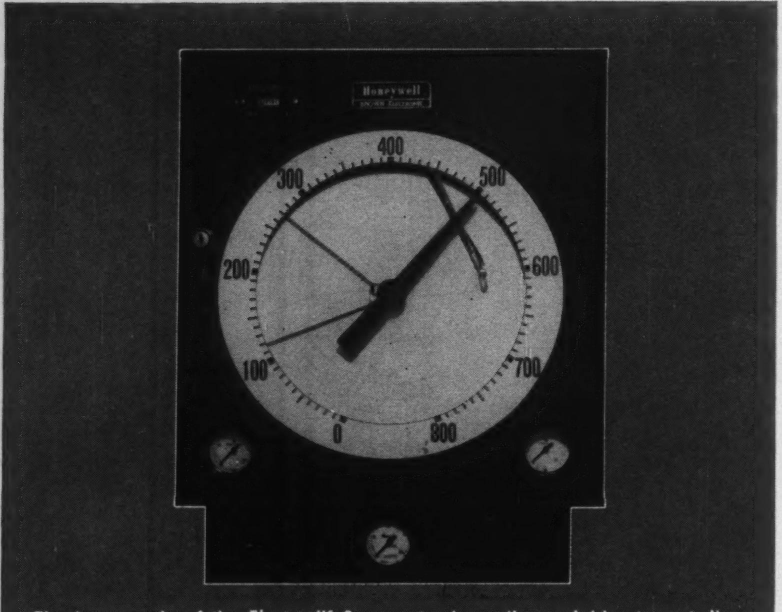
use these accessories with the *ElectroniK* flow meter



Area type electric flow transmitter for measurement of the flow of oil, tar, pitch or other viscous fluids.



Ledoux bell type electric meter body for measuring atomizing steam flow.



The large scale of the *ElectroniK* flow meter is easily readable at great distance. Flow, regardless of the fuel used, is recorded on an evenly-graduated chart. Functions of measurement, integration, control, retransmission, and remote set point adjustment can all be incorporated in this single instrument.

ElectroniK flow meter lets you switch fuels without upsetting fuel-air ratio

. . . records, indicates, integrates, controls and transmits

Use the highly versatile, accurate *ElectroniK* flow meter to save fuel dollars and improve operating efficiency in combined fuel systems. It's calibrated for both gas flow and equivalent oil flow, and automatically proportions the input of each type of fuel on the basis of total Btu input required at the furnace.

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The meter can be supplied with an adjustable *Indexet* unit by which the set point can be established from a remote point—manually, by a pneumatic loading station, or automatically, by another instrument. *Indexet* also provides the wide span and zero adjustments needed to "tune" the instrument to the process with extreme precision.

Other options, such as a re-transmitting slidewire or pneumatic transmission unit, adapt the *ElectroniK* flow meter to a variety of interlocked systems. The flow transmission system permits remote location of the meter.

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AN IRON AGE SPECIAL REPORT TO MANAGEMENT

"Soaring '60's": What Business Can Expect in Next Decade

By **Dr. H. T. Hovde,** Vice President-Treasurer, Coordinated Marketing-Management Corp., New York

Business will trend steadily upward in the next decade.

The economy will pass the $500-billion mark late this year. And it may hit $700-billion by 1970.

But progress will be marked by changing market patterns. Here is a studied forecast for the next ten years.

■ With traditional forecasts for the New Year behind us, a longer look may sober the champagne optimism about the size — and shape — of things to come.

Can our economy continue the postwar pace?

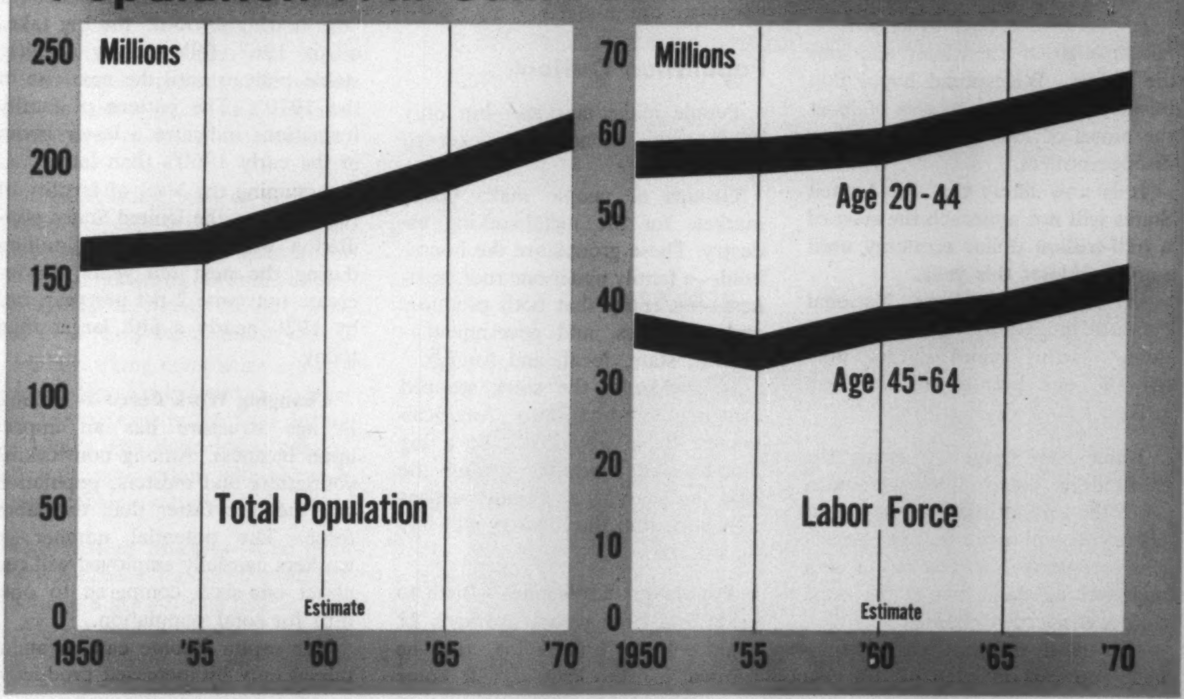
Will the road lead to the Golden Sixties?

Is the glitter mere fool's gold, or real nuggets?

How you look ahead, and what you do about the problems to be faced in the soaring—but critical—1960's will determine your position in the metalworking industry.

No Magic Numbers—At the outset, let's state it bluntly. There is no magic in numbers. If population grows—as it surely will, you've got it made in marketing opportunities.

Production factors are favorable. But market potentials are open to


Population Will Gain Faster Than Labor Force

Dr. Howard T. Hovde

No Ready-Made Market in '60's

In this article Dr. Howard T. Hovde is less concerned about a precise forecast than in the scope of business problems facing management.

As he sees it, the 1960's provide no ready-made market, but an opportunity for order-makers, not order-takers.

While he may be more interested in the broader picture, his forecasts have a way of working out. In his April 17, 1958, article for The IRON AGE he accurately forecast the 1959 upturn.

Headed AMA—Dr. Hovde is a past national president of the American Marketing Assn., formerly a faculty member of U. of P's Wharton School.

He is now vice president-treasurer of The Coordinated Marketing-Management Corp., an affiliation of specialists in management, marketing and applied economics.

Charts and tables for these forecasts were prepared in cooperation with L. D. Colburn, a former colleague, now president of the Economic Forecasting Institute, Inc.

---

others—here and abroad. The next decade will be highly competitive—a business era of "hard sell."

Profits—never assured—may be even harder to come by.

Slow Start—Lower business activity during the second half of 1959 upset the running start expected for the opening months of the new decade.

Effects of the steel strike will be felt throughout the winter and into the spring. Widespread hopes that business would leap to new highs at the outset of 1960 were doomed to disappointment.

It is now likely that the United States will not approach the start of a half-trillion dollar economy until sometime later this year.

In 1959, the Gross National Product moved up to 485 billion dollars in the second quarter, only to fall back because of the steel strike.

Enter New Stage—Crossing the 500-billion dollar line will mean more than a statistical event in our history. It will mean that the American economy has reached a new and exciting stage, but at the same time a dangerous phase.

To trend the outlook continuously upward in each of the next ten years is misleading. Only the direction is a straight line—not the course of intermediate events.

Progress cuts downward—as well as upward—in its saw-toothed effect on the economy. If not strikes, then other factors, will deter progress as the economy spurts ahead and halts at intervals during the next decade.

Where we have been determines where we are going.

Population Outlook

People make markets—but only people with money in pocket to spend.

Groups of people make better markets for the metalworking industry. These groups are the household—a family under one roof, business—an entity that both produces and consumes, and government—federal, state, local, and foreign.

If, suddenly, the stork stopped bringing children into American homes, there would still be a big metalworking industry during the next ten years. It is among persons now born that the industry will rely on volume.

Population Explosion — Birth to bride and bridegroom averages 21 years. New households, to be formed in the 1960's, will come from children born between 1939 and 1949. The population explosion in the United States started after the war.

Therefore, 21 years later, marriages in the first half of the 1960's will be about half of what may be expected in the second half.

Late '60's Will Tell—If the next decade is to earn the accolade of "the soaring 1960's," the big takeoff is 1967, followed by a fairly stable plateau until the next rise in the 1970's. The pattern of family formations indicates a lesser boom in the early 1960's than later.

Assuming the level of fertility of recent years, the United States population will rise about 34 million during the next ten years, an increase not quite 2 pct per year, but by 1970 nearly a fifth larger than today.

Changing Work Force — Change in age structure has an impact upon business. Among nonworking youngsters and oldsters, population will increase faster than the labor force. The potential number of workers gainfully employed will rise about one-sixth compared to one-fifth for total population.

Per capita income can be maintained only by increased productivity. Further gains in productivity are necessary over and above the disparity in age groups to support more educational facilities and public services demanded by population growth.

Factory Jobs Steady — Employment opportunities will increase in distribution and services both by private industry and government, rather than in manufacturing.

This continues a trend of the past ten years, which has shown factory employment remaining constant in the face of a one-third rise in industrial production.

During the decade, households will grow at about the same rate as population increases. However, anticipated marriages are greater toward the end. Thus, accelerated demand for housing and household items will be gradual.

Meanwhile, housing, as an example, has temporarily passed the peak of new starts. The demand in the early years will remain fairly constant. The replacement market for household items, nevertheless, will continue the upward trend throughout the decade.

More New Companies—Business firms now operating in the United States exceed 4.6 million, an increase of 60,000 per year since 1950. A steady growth of firms will produce more goods and services, but not always in the same business lines.

Manufacturing firms, in numbers, account for only 8 pct of American companies. Fabricated metals, for example, including ordnance and accessories represent 27,000 business firms as a basic industry.

Metalworking companies are less likely to increase in number of firms than the increase in the total during the 1960's. But both dollar volume and unit production will increase among existing metalworking firms.

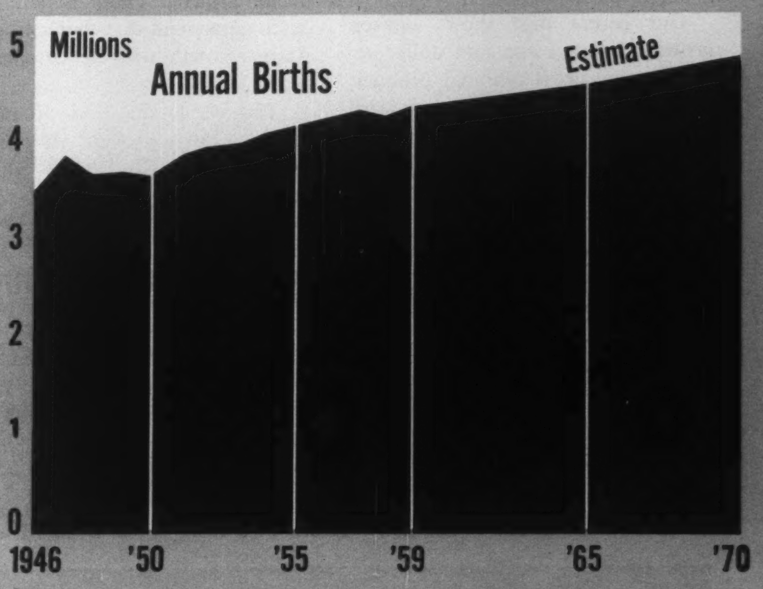
Government Markets—The government market for metal products will show a growth rate in line with population growth. Needs of federal, state, and local political units cannot reasonably be expected to reduce expenditures over the long-run period.

If defense needs drop off, the same or increasing expenditures will most likely be transferred to peacetime projects.

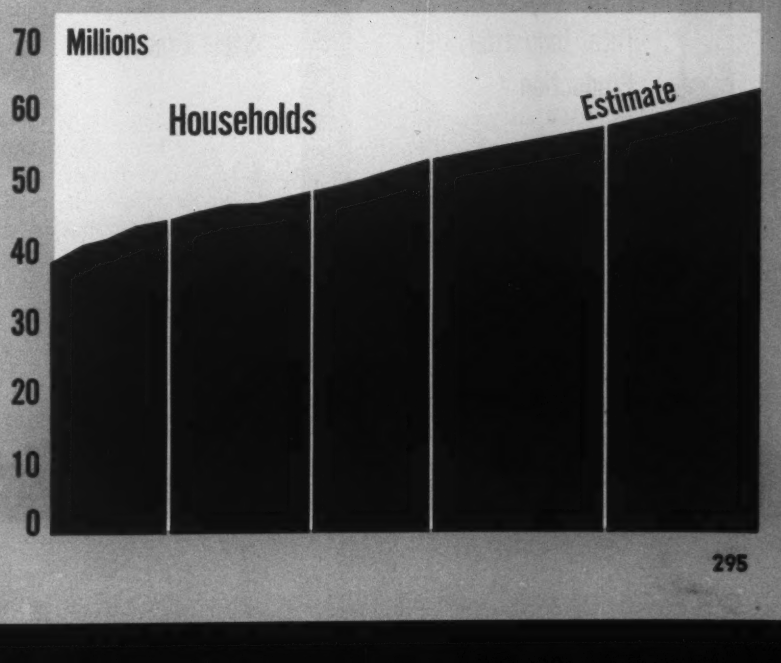
Bigger Tax Bites? — The mixed blessing of the government market is apparent. Purchases by government-directed projects are invariably offset by the tax burden that supports business selling to government.

Total taxes now exceed a quarter of national income. The inflationary tendency mounts with each added tax increment to support the government market for more and more projects and services.

The question arises as to how much production output and income the government will take during the



As Birth Rate Goes Up . . .



So Will Family Buying

decade and its effect upon prices.

Economic Growth

The "numbers game" has been applied to national growth by politicians, economists, and forecasters. Take any number between 1 and 9; the odds of late, seem to favor the larger because of economic ambition larded with propaganda.

Uneven Growth—Picking a number for probable growth in the 1960's is like pinning a tail to the donkey. The blind-fold choice points in a direction—called "growth"—demonstrated from the past.

Our recent past shows uneven growth. Using a constant dollar series for the gross national product, the annual rate has ranged upward to nearly 9 pct for a one-year period between 1949 to 1950, to a shrinkage of about 3 pct between 1957 and 1958.

The annual average over the past decade remains close to 3 pct, a one-third increase for the decade.

Inflation's Effects—If the changes in growth are related to the consumer price index, the measure in current dollars is exaggerated by inflation. The shrinkage of current dollars in terms of prewar dollars is obvious.

Because of the inflation spurt after the war, inflation averaged over 3 pct per year for the past twenty years and about 2 pct per year for the past ten years.

By price manipulation, a growth rate may correspond to a desired dollar figure and not yield any more real goods and services.

Need Faster Growth—The case against forced growth or a specific growth target is not a case against faster growth. There apparently is wide agreement that there should be faster growth with endorsement of Federal aid.

The whole question of national growth was brought into sharp focus by Mr. Khrushchev when he asserted that the Soviet Union would out-produce us by 1970.

Free World Competition

What about competition from within the Free World?

The past year has seen each inroads from European and Japanese production that it again raises the question of protective tariffs and quotas.

Outside the United States, foreign labor receives as little as 10 cents upward to 40 cents for every dollar paid to American workmen. Higher wage scales make for higher purchasing power only in domestic trade.

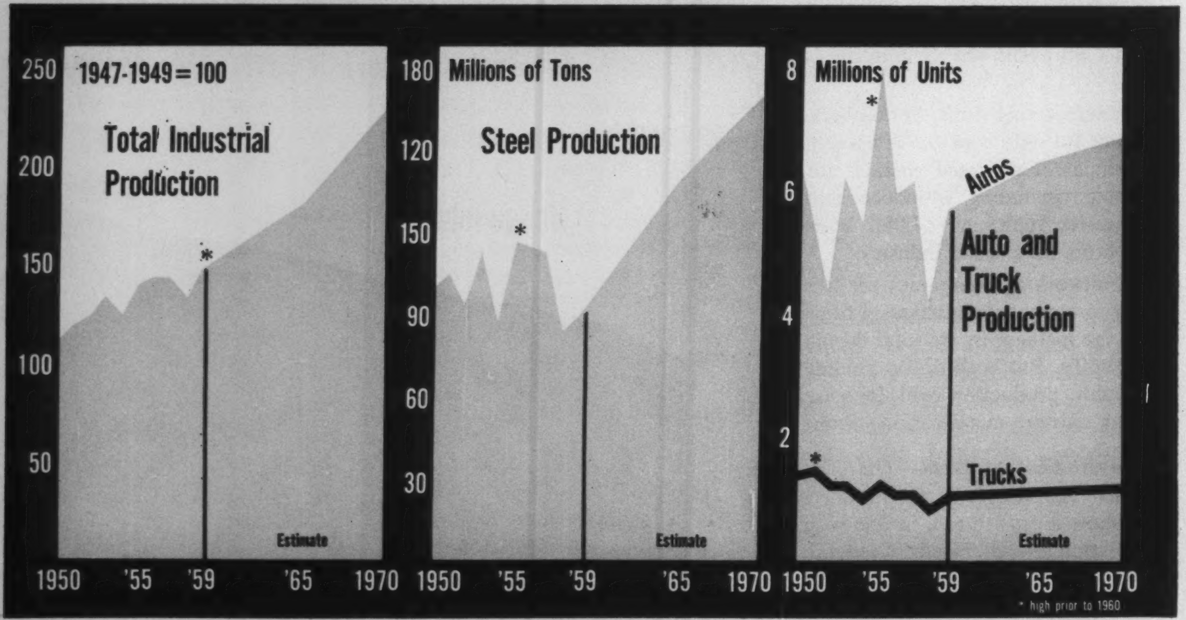
U. S. Shut Out—The U. S. economy lends heavily on labor income compared to capital income. The share of wages and salaries now paid equals 70 pct of our national income as against 65 pct in 1939.

Other income shares—such as proprietors' income, dividends, rentals, and interest—are proportionately lower than prewar.

Discounting the fear of Russian competition, the Free World markets are rapidly closing doors to American products. The vigorous economic comeback abroad has raised consumption and increased foreign restrictions to American products.

ECM Restrictions—In the European Common Market, the six member nations are planning as

Ten-Year Outlook for Production, Steel, Autos



early as 1965 the speed-up of an economic community, now 170 million persons, with no trade barriers among them. Under the present schedule this will not come about until 1970 to 1973.

Tariffs from imports to the European Common Market would be slightly lower for food stuffs and raw materials. But manufactured products from the United States will, on average, be higher. The net effect will be further restrictions on U. S. exports of metal products.

New Trading Bloc—A second Western European trading bloc became a reality when the so-called Outer Seven countries established the European Free Trade Association last November.

Like the European Common Market, dropping of trade barriers among these countries would be accomplished by 1970. But an earlier step might be taken to incorporate all eighteen countries into a single free-trade bloc among themselves.

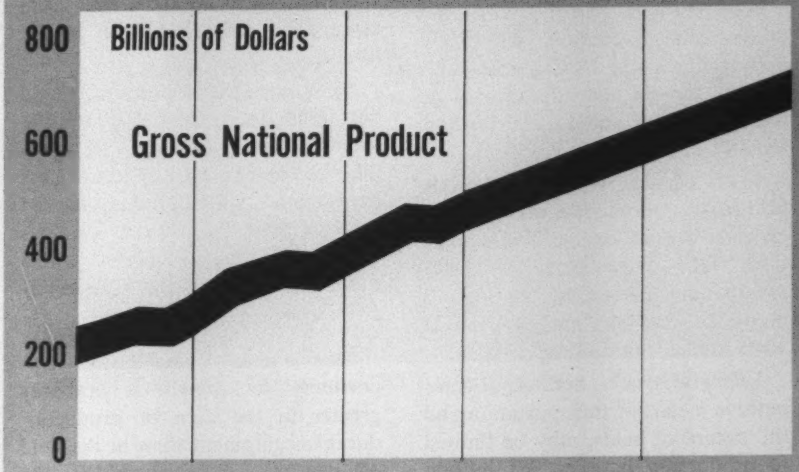
Products have no nationality. Within economic blocs, either in being or planned the foreign consumer attitude is that American products are no better, but more expensive.

The European businessman is not afraid of American competition. Foreign governments are anxious to attract investment.

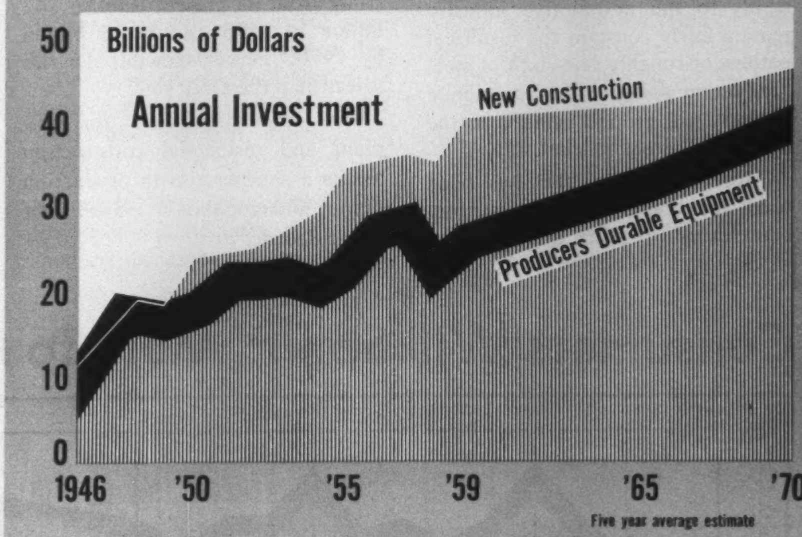
Higher U. S. Imports — During the 1960's more goods, formerly exported from the United States, will be made abroad. Some of this production will return to American shores and be consumed here to the detriment of American-based manufacturers.

This directs attention to some fundamental problems, including long-term growth, to be brought into sharper focus as the Free World economy outside the United States moves ahead.

GNP Heads for $700 Billion . . .



But Durables Will Rise Faster



Production Outlook

Despite these unfavorable factors, U. S. production of goods and services will rise not less than a third in the next ten years.

With incentives for faster growth, it is reasonable to assume that our economy will be operating 40 pct higher.

This means that the gross national product, which is expected to cross the half trillion mark later this year, will approach $700 billion by 1970.

Industrial production, measured by the Federal Reserve Board Index (1947-49 = 100), would rise from a level now about 150 to 225.

Changes in FRB Index — The FRB Index is trended at a growth rate higher than the GNP. The index recently was readjusted by the Federal Reserve Bank. Revised figures (not shown here) are up about 10 pct.

As with all historical data, there was need for realignment because of new products and new developments within our economy.

Component parts within the old Index have shown growth rates disproportionate to the Federal Reserve Board Index as a whole.

Steel Outlook—Steel production, despite wide fluctuations, will probably rise from the 1955 high of 117 million tons to 138 million tons in the mid-1960's and to 169 million tons by 1970.

Users of steel will vary by product lines. Automobile manufacturers because of competitive conditions may have some difficulty maintaining passenger car output above 6.5 million cars a year in 1965 and 6.9 million by 1970.

Likewise, trucks, because of competitive means of transportation and the nature of hauls, may be limited to production between 1.1 million and 1.2 million in the various years ahead.

Changing Markets—If steel shipments to the automotive industry remain fairly constant the historical pattern of roughly one-sixth of steel production going to the automobile industry will drop in relation to the rising total steel market.

More and more steel has been used for containers, construction, contractors' products, and electrical machinery and equipment in recent years. These industries probably will continue to absorb a large percentage of steel production in the future.

Steel tonnage has proportionately decreased for rail transportation. This market is unlikely to again take as large a part of total steel production. Agricultural equipment users of steel face further declines because of crop surpluses which cannot continue at the rate of recent years.

New Plants Come Later—Opportunity for growth is probably greater in the area of producers' durable equipment than in the field of new construction during the 1960's.

The annual investment in new construction will continue heavy, rising from its present level to $42 billion in 1965 and $46.5 billion by 1970. Percentagewise, the rise is less than the GNP rate.

The immediate need for new plant and residential construction awaits a sharper rise in production output and population growth later in the decade.

Durables Will Spurt—Demand for producers' durable equipment should rise sharply throughout the next ten years, and at a rate greater than the Gross National Product.

The annual investment in producers' durable goods is forecast to reach $33 billion in 1965 and $40 billion by 1970. This is in contrast to an estimated $26 billion for 1959.

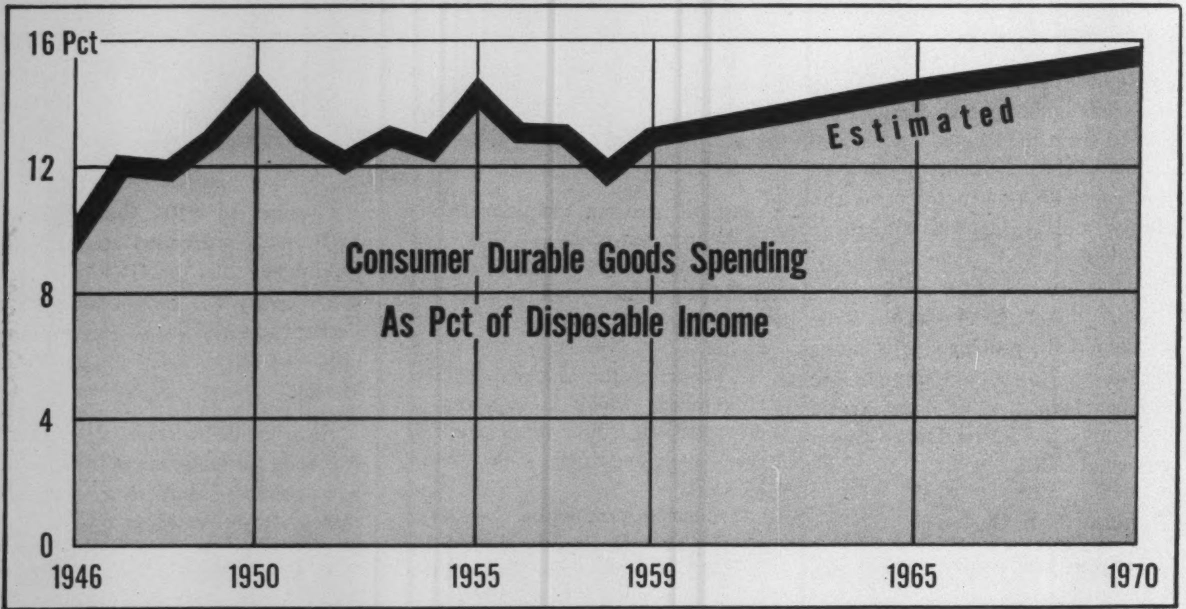
Personal Spending—With the upward pressure to pay more wages and to reduce costs by labor-saving equipment, the living standards during the decade will furnish an additional market for the metalworking industry.

Personal consumption expenditures recently have exceeded $300 billion a year. That is a whoppin' lot of shoppin' even for the smaller share that goes to metal products.

Metalworking industries that rely on growth in consumer durable goods will prosper during the decade.

Within the past ten years the percentage of disposable personal income paid out as consumer expenditures for durable goods has

Consumers Will Spend More to Make Life Easier



AUTO TARGET: Output may hit 6.9 million by 1970. Ford photo.

ranged between 12 and 14 pct. Only in the years 1950 and 1955 were these top limits exceeded.

Adjust Policies—The percentage of consumer expenditures for durable goods is likely to climb to 14.5 pct in 1965 and reach 15.5 pct by 1970. Like manufacturers' investment in producers goods, the consumer, too, faces higher requirements for mechanical aids in his daily living.

In sum, L. D. Colburn, President of the Economic Forecasting Institute, who collaborated in preparing these forecasts, expresses this opinion:

"During the decade of the 1960's, economic activity in the United States is likely to fluctuate with greater magnitude and changes are likely to be more rapid than in the post World War II period. Thus, the individual firm and each industry will need to adjust policies more quickly to meet changes in economic conditions—if they are to maintain their proportion of the total market."

Profit Outlook

There is truth in the wise-crack that profit—not prophets—foretells the future.

Buying plant and equipment is essentially a long-term forecast, usually for the period of permissible tax write-off. The useful project life for capital investment, because of technical obsolescence, is shorter than the wear-out rate. Somewhere between extremes, a judgment is made as to pay-off.

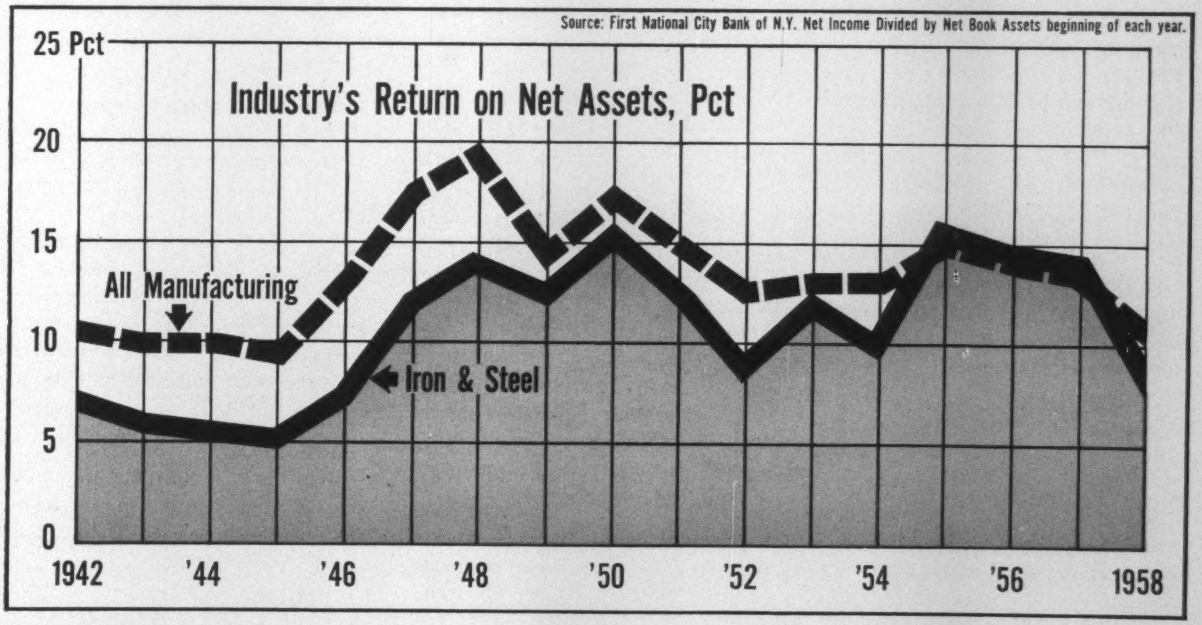
Look to '70's—Part of the 1960's growth was anticipated when productive capacity was expanded over the last ten-year period.

From 1946 through 1958 outlays by U. S. business for new plant and equipment amounted $336 billion. Additional capacity to be added in the next ten years depends not only on high level activity but further growth into the 1970's.

Economic welfare depends to a large degree upon the amount invested in expanding the output of goods and services.

Have returns been commensurate with investments? Are anticipated

Declining Profits Call For Higher Volume



Source: First National City Bank of N.Y. Net Income Divided by Net Book Assets beginning of each year.

PLANT SPENDING: To meet rising costs industry will invest heavily in more efficient equipment. Spending for producers' durable may reach $40 billion yearly in 1970. Westinghouse photo.

profits adequate to induce new investment at a rate equal to, or faster, than in the past?

Big Capital Investment—Historical data may not fit conditions in the 1960's, but, at least, are guide posts.

Since 1945, American industry has put on the books at rising price levels a tremendous capital investment which has broadened the capital base and helped to narrow the discrepancy between book values and real values.

A measure of book net assets (also called "net worth," "capital and surplus," or "shareholders' equity") is provided in the annual compilation by the First National City Bank of New York. The chart on p. 299 shows the pct return of net assets on net returns from 1942 through 1958.

Lower Profit Trend—Excluding abnormal depression and war years, high returns encouraged high investment and helped generate the capital necessary for normal expansion.

Target returns in excess of 20 pct encourage new industry, but the average manufacturer never reaches this target.

Except for three years, the iron and steel industry netted less than the average of all manufacturing. Returns for the somewhat higher years of 1955 to 1957 were not exorbitant.

Economic, social and political conditions outside the control of management weigh heavily on business success or failure. The declining profit trend during the 1950's would lead to an assumption that the percent of returns on net assets for the average manufacturing firm will be about 10 pct during the 1960's.

Need Higher Volume—If so, the conclusion is inescapable. More gross dollars in sales will be needed to support capital expansion in the 1960's. This can come about only through increased volume.

To increase production industry will need to invest heavily in more modern and more efficient machinery.

Crisis Ahead?—The years ahead may generate a financial crisis, particularly if price inflation continues unchecked.

Inflation, while a political consideration, has not entirely been held back by government policy since some short-sighted businessmen favor inventory profits over conversion profits in the manufacture and sale of goods.

Earnings Drop—If price inflation continues, many serious problems confront industry to keep plant and equipment modern and install new capacity to meet future needs.

The Competitive 1960's

Contrary to popular opinion, no ready-made market lies ahead. The 1960 decade provides only opportunities for order-makers not order-takers.

What new developments will affect the metalworking industry? These are yet to be discovered in the laboratory of research and development. Routine activities in the heavy goods industries are likely to adhere to a slower growth rate than new industries which furnish new competition.

Apply Marketing Concept — To grasp fully the opportunity of the decade, management will lean heavily on a business philosophy known as the "marketing concept."

The role of hunch has given way to rational, analytical planning.

Managerial decisions during the 1960's will lean heavily toward the marketing-management phases of business while adhering closely to problems of lower production costs and forward financial planning.

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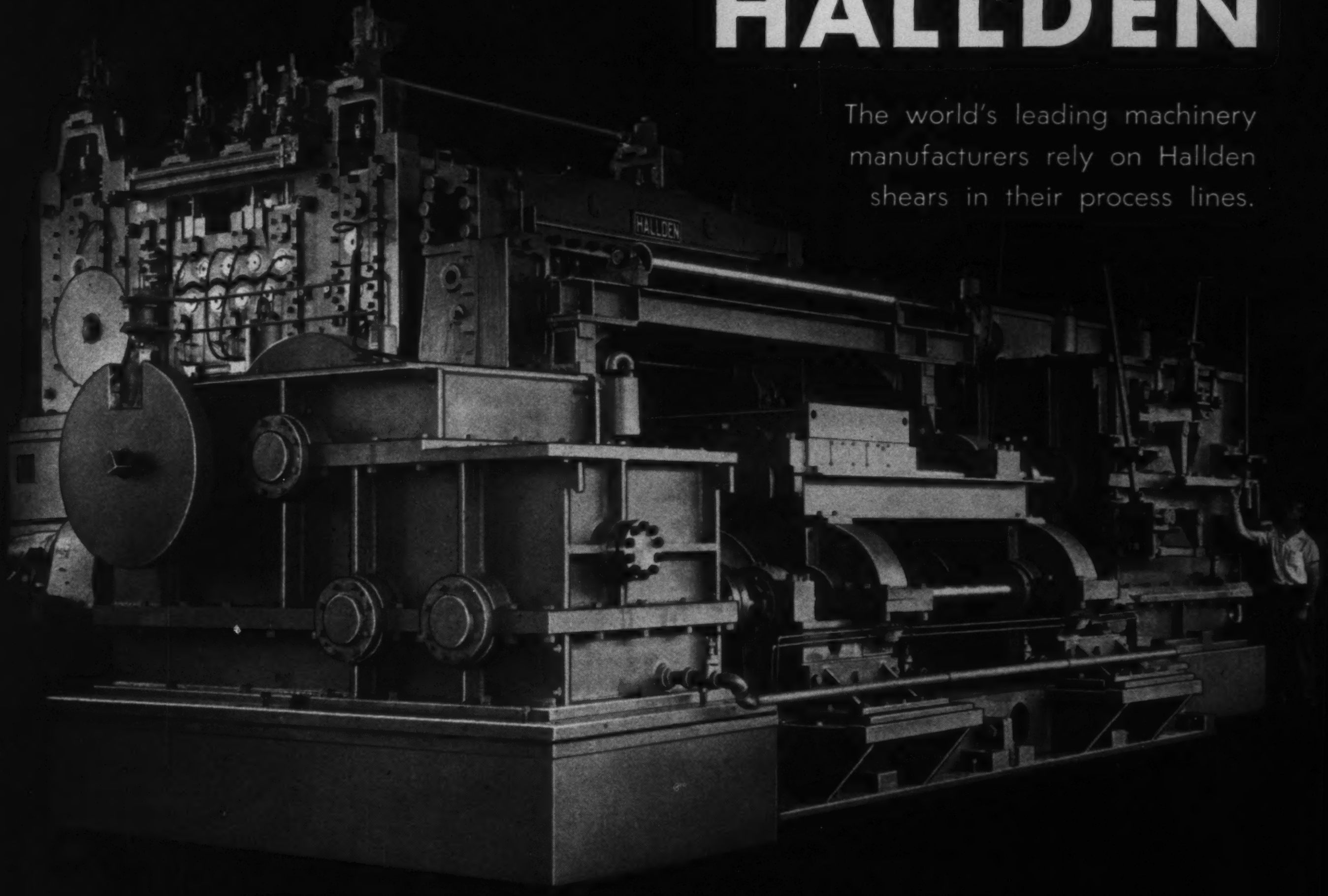

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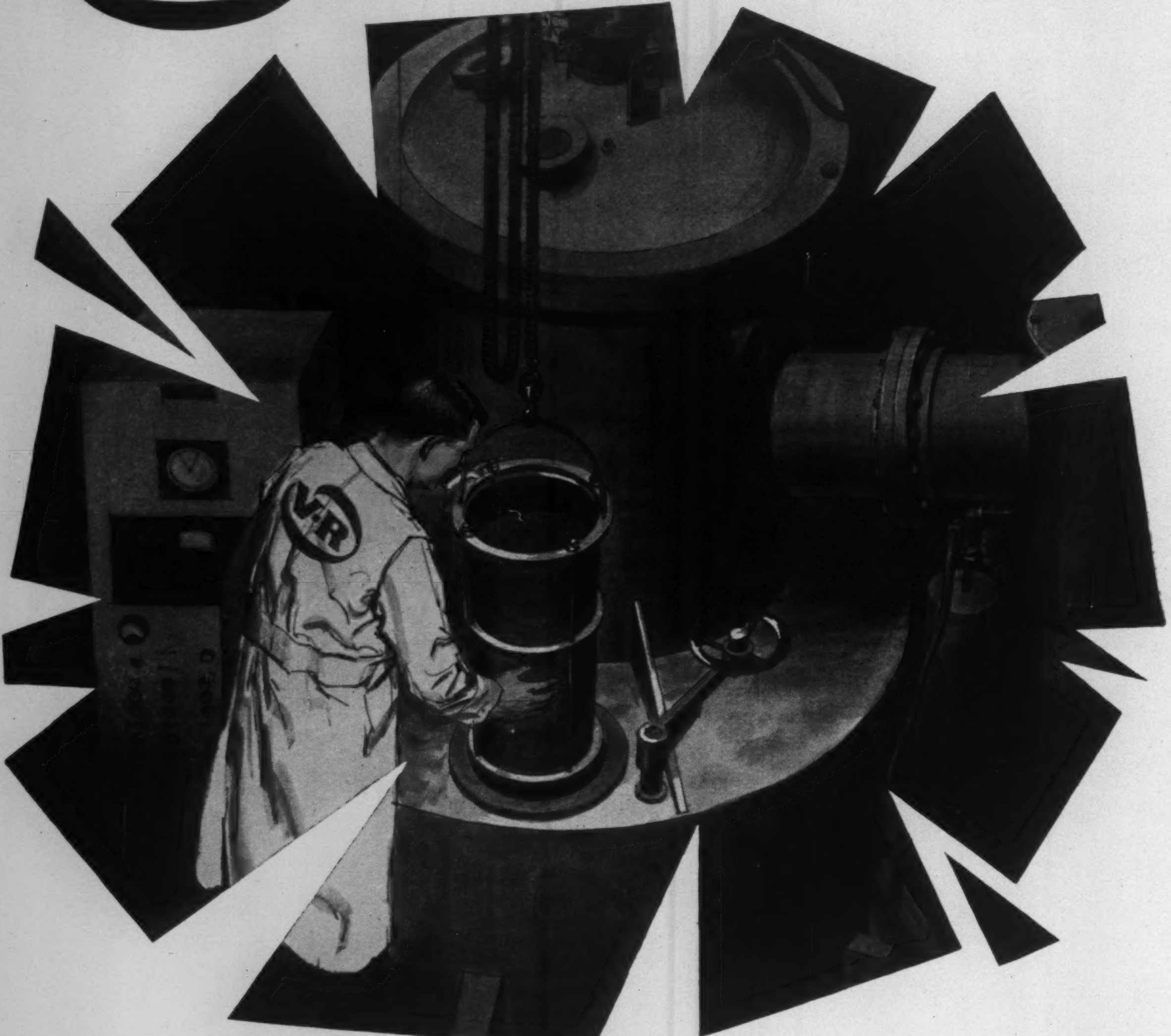

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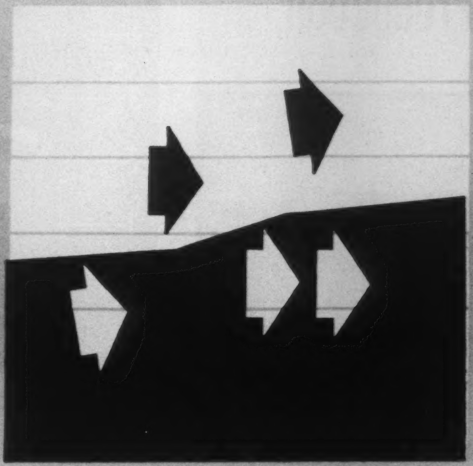

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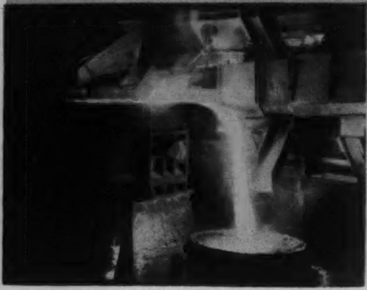
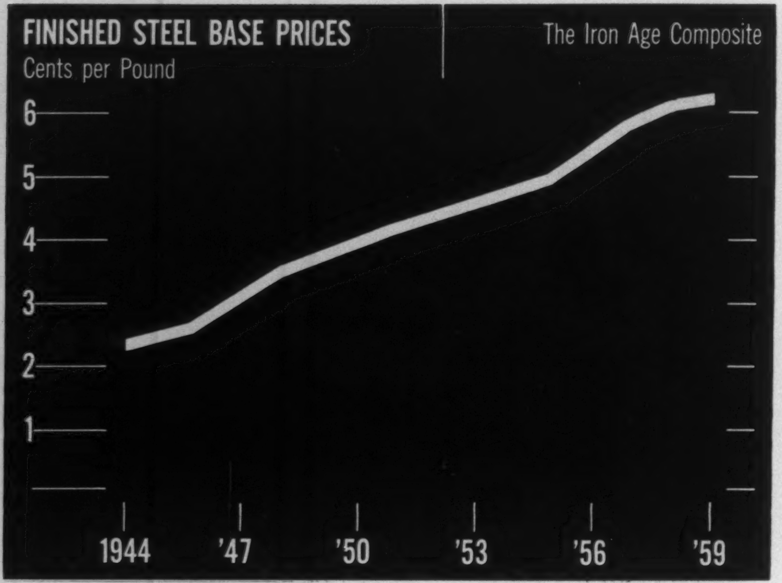
Tinplate at Pittsburgh 309

Steel Prices, Production





THE IRON AGE FINISHED STEEL COMPOSITE PRICE

Current Series, 1935 to 1958, Cents Per Pound

	1936	1937	1938	1939	1940*	1945*	1946	1947	1948	1949
Jan.	2.076	2.323	2.584	2.354	2.305	2.412	2.464	2.877	3.193	3.720
Feb.	2.065	2.323	2.581	2.354	2.305	2.427	2.555	2.884	3.215	3.719
Mar.	2.055	2.532	2.578	2.354	2.305	2.432	2.719	2.884	3.241	3.715
Apr.	2.062	2.584	2.578	2.354	2.267	2.433	2.719	2.884	3.241	3.709
May	2.062	2.584	2.569	2.308	2.305	2.436	2.719	2.884	3.214	3.706
June	2.067	2.584	2.513	2.283	2.305	2.464	2.719	2.884	3.211	3.705
July	2.139	2.584	2.359	2.283	2.305	2.464	2.719	2.914	3.293	3.705
Aug.	2.139	2.584	2.359	2.283	2.305	2.464	2.719	3.193	3.720	3.705
Sept.	1.146	2.584	2.357	2.283	2.305	2.464	2.719	3.193	3.720	3.705
Oct.	2.172	2.584	2.320	2.283	2.305	2.464	2.719	3.193	3.720	3.705
Nov.	2.172	2.584	2.354	2.268	2.305	2.464	2.719	3.193	3.720	3.705
Dec.	2.283	2.584	2.354	2.305	2.305	2.464	2.747	3.193	3.720	3.756
Average	2.118	2.536	2.459	2.311	2.302	2.449	2.686	3.014	3.434	3.713

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Jan.	3.837	4.131	4.131	4.376	4.634	4.797	5.174	5.622	5.967	6.196
Feb.	3.837	4.131	4.131	4.376	4.634	4.797	5.174	5.649	5.967	6.196
Mar.	3.837	4.131	4.131	4.376	4.634	4.797	5.179	5.666	5.967	6.196
Apr.	3.837	4.131	4.131	4.376	4.634	4.797	5.179	5.670	5.967	6.196
May	3.837	4.131	4.131	4.393	4.634	4.797	5.179	5.670	5.967	6.196
June	3.837	4.131	4.131	4.517	4.634	4.797	5.179	5.670	5.967	6.196
July	3.837	4.131	4.180	4.634	4.789	5.081	5.179	5.818	5.967	6.196
Aug.	3.837	4.131	4.376	4.634	4.801	5.174	5.560	5.967	6.175	6.196
Sept.	3.837	4.131	4.376	4.634	4.801	5.174	5.622	5.967	6.194	6.196
Oct.	3.837	4.131	4.376	4.634	4.798	5.174	5.622	5.967	6.196	6.196
Nov.	3.837	4.131	4.376	4.633	4.797	5.174	5.622	5.967	6.196	6.196
Dec.	4.131	4.131	4.376	4.633	4.797	5.174	5.622	5.967	6.196	6.196
Average	3.862	4.131	4.237	4.518	4.716	4.977	5.358	5.800	6.060	6.196

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* 1941-1944 inclusive: 2.396.

THE IRON AGE finished steel composite price is a weighted average of the base prices of 10 major steel products which account for the majority of finished steel shipments. It is weighted by the percentage that each of these products is to total finished steel shipments during the base period. With the base constant, the only changes in the composite from 1929 through 1940 or from 1941 through 1959 occur when one or more steel products prices were changed.

In the composite shown here there are two base periods. For the years 1931 through 1940 the base is finished steel shipments for 1929-1939 inclusive. For 1941 through 1959 the base is finished steel shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. Two base periods are used because of basic changes in the shipment pattern in the 20 years covered. In each case the products remain the same. They are hot-rolled bars, structural shapes, plates, rails, pipe, wire and hot- and cold-rolled sheets and strip. To eliminate variations due to nonferrous metals price fluctuations, no coated products are included.

Details of latest revisions which appear in current series may be found in The Iron Age, May 12, 1949, p. 139. This reference also gives a comparison of current series with former series.

STEEL INDUSTRY OPERATING RATES

U. S. Openhearth, Bessemer and Electric Furnace Ingots and Steel for Castings—Percent of Capacity

	1941	1942	1943	1944	1945	1946
Jan.	96.90	94.50	96.80	95.70	88.80	49.60
Feb.	96.60	95.90	98.50	97.00	90.80	19.80
Mar.	99.70	98.20	100.00	98.60	95.00	83.30
Apr.	97.60	97.70	99.30	98.80	92.80	77.50
May	98.70	98.10	98.40	97.10	91.80	52.20
June	98.20	96.30	94.80	94.10	87.10	74.40
July	93.40	94.50	96.20	94.30	86.30	84.90
Aug.	95.70	95.40	98.30	94.10	70.70	86.90
Sept.	96.40	96.40	100.70	94.00	76.30	86.90
Oct.	99.00	100.00	101.20	95.60	69.00	89.00
Nov.	98.30	97.80	98.60	94.30	78.90	85.40
Dec.	98.10	96.60	94.20	92.60	74.80	73.90
Average	97.40	96.80	98.10	95.50	83.50	72.50

	1947	1948	1949	1950	1951	1952
Jan.	93.20	93.60	100.4	94.0	99.9	99.3
Feb.	91.90	93.00	101.6	89.2	97.2	100.7
Mar.	94.40	95.30	102.9	88.8	102.5	102.2
Apr.	93.90	80.40	98.6	100.6	103.1	89.7
May	94.70	94.80	93.0	101.4	102.8	89.2
June	92.90	93.80	82.2	99.6	101.0	18.4
July	85.10	88.70	71.0	94.8	98.3	17.7
Aug.	92.20	93.10	82.3	96.5	98.7	92.4
Sept.	90.80	96.10	83.6	99.4	101.2	101.9
Oct.	97.70	99.90	11.4	102.4	103.0	106.6
Nov.	96.50	100.50	53.4	97.0	102.6	105.9
Dec.	95.40	97.70	94.8	98.0	100.6	105.6
Average	93.00	94.10	81.1	96.9	100.9	85.8

	1953	1954	1955	1956	1957	1958	1959
Jan.	99.1	75.3	82.7	99.3	97.1	56.5	74.3
Feb.	99.1	74.3	88.0	99.2	97.6	53.6	84.8
Mar.	101.8	69.0	93.4	100.2	93.4	52.3	92.3
Apr.	98.7	68.1	94.8	99.7	89.5	47.8	93.0
May	100.1	70.7	96.6	96.2	86.4	52.7	92.5
June	97.2	72.0	94.1	92.1	85.6	61.6	89.9
July	93.1	62.9	85.3	14.9	78.6	53.9	41.7
Aug.	94.2	63.1	89.7	74.5	81.5	61.1	11.5
Sept.	92.1	66.7	95.7	98.8	81.8	66.0	12.7
Oct.	94.7	72.9	98.2	101.3	81.1	74.0	13.6
Nov.	89.9	79.1	99.0	100.0	76.5	74.1	59.8
Dec.	79.7	78.6	98.5	99.4	72.0	72.9	85.7*
Average	94.9	71.0	93.0	89.8	84.5	60.6	62.6*

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* Estimate.

Source: American Iron and Steel Institute.

Openhearth, bessemer and electric furnace steel capacity, production and operating rates . . . Canadian output, capacity.

COMPOSITE PRICE BY PERIODS

Period	Cents per Pound
Apr. 12, 1949 to May 2, 1949	3.708
May 3, 1949 to Dec. 21, 1949	3.705
Dec. 22, 1949 to Dec. 28, 1949	3.836
Dec. 29, 1949 to Dec. 4, 1950	3.837
Dec. 5, 1950 to July 25, 1952	4.131
July 26, 1952 to May 8, 1953	4.376
May 9, 1953 to May 21, 1953	4.390
May 22, 1953 to June 16, 1953	4.417
June 17, 1953 to Nov. 14, 1953	4.634
Nov. 16, 1953 to Dec. 15, 1953	4.632
Dec. 16, 1953 to June 30, 1954	4.634
July 1, 1954 to July 2, 1954	4.635
July 3, 1954 to July 5, 1954	4.791
July 6, 1954 to Oct. 3, 1954	4.801
Oct. 4, 1954 to Nov. 9, 1954	4.798
Nov. 10, 1954 to July 11, 1955	4.797
July 12, 1955 to July 18, 1955	5.178
July 19, 1955 to July 25, 1955	5.176
July 26, 1955 to March 19, 1956	5.174
Mar. 20, 1956 to Aug. 6, 1956	5.179
Aug. 7, 1956 to Aug. 13, 1956	5.374
Aug. 14, 1956 to Feb. 11, 1957	5.622
Feb. 12, 1957 to Feb. 18, 1957	5.650
Feb. 19, 1957 to Feb. 25, 1957	5.661
Feb. 26, 1957 to March 4, 1957	5.663
March 5, 1957 to July 8, 1957	5.670
July 9, 1957 to Aug. 4, 1958	5.967
Aug. 5, 1958 to Aug. 11, 1958	6.138
Aug. 12, 1958 to Sept. 8, 1958	6.188
Sept. 9, 1958 to Dec. 31, 1959	6.196

CANADIAN STEEL OUTPUT

Ingots and Steel for Castings, Net Tons

	Ingots	Castings	Total Steel Ingots and Castings
1932	349,843	25,664	375,507
1933	441,346	17,830	459,176
1934	827,041	23,116	850,157
1935	1,016,814	35,123	1,051,937
1936	1,211,334	38,337	1,249,671
1937	1,496,575	74,652	1,571,137
1938	1,238,078	56,636	1,294,714
1939	1,266,056	60,997	1,327,053
1940	2,177,973	77,899	2,255,872
1941	2,578,063	123,250	2,701,313
1942	2,942,921	178,440	3,121,361
1943	2,848,235	148,743	2,996,978
1944	2,878,407	146,003	3,024,410
1945	2,747,206	134,117	2,881,323
1946	2,253,437	81,194	2,334,631
1947	2,854,532	90,634	2,945,166
1948	3,089,027	112,629	3,201,656
1949	3,089,368	97,562	3,186,930
1950	3,298,068	86,063	3,381,131
1951	3,446,125	121,236	3,567,361
1952	3,578,106	122,037	3,700,143
1953	4,009,813	105,656	4,115,469
1954	3,113,882	80,300	3,194,122
1955	4,441,743	87,658	4,529,401
1956	5,188,227	120,578	5,305,805
1957	4,924,133	113,731	5,037,864
1958	4,254,607	90,684	4,345,291
1959*	5,709,000	106,000	5,815,000

* Estimated. Source: Dominion Bureau of Statistics.

CANADIAN STEEL CAPACITY

Ingot Capacity and Operating Rates

	Steel Ingot Capacity	Steel Ingot Output	Percent of Capacity
1941	2,964,000	2,578,063	86.9
1942	3,172,000	2,942,921	92.7
1943	3,257,500	2,848,235	87.4
1944	3,338,200	2,878,407	86.2
1945	3,358,600	2,767,206	81.7
1946	3,358,600	2,253,437	67.0
1947	3,245,000	2,854,532	87.9
1948	3,490,000	3,089,027	88.5
1949	3,598,000	3,089,368	84.1
1950	3,672,500	3,298,068	89.8
1951	3,630,900	3,446,125	94.9
1952	3,630,900	3,578,106	98.5
1953	4,302,800	4,009,813	93.1
1954	4,657,500	3,113,822	66.8
1955	4,883,000	4,441,743	90.9
1956	5,504,000	5,185,227	94.2
1957	5,504,000	4,924,133	89.4
1958	6,313,000	4,254,607	67.3
1959*	6,313,000	5,709,000	90.4

* Estimated. Source: Dominion Bureau of Statistics.

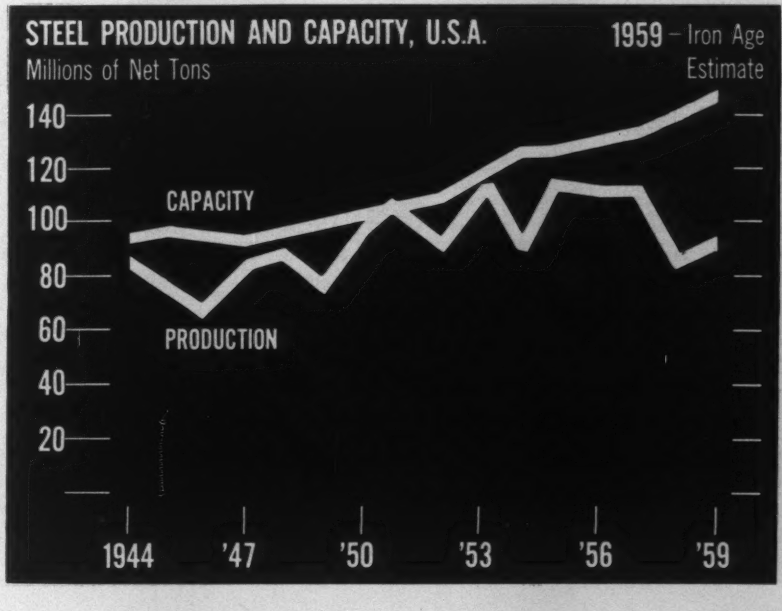
STEEL CAPACITY, PRODUCTION AND RATES

Ingots and Steel for Castings, Net Tons

		Openhearth		Bessemer		Electric*		Total	
	Total Capacity	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Capacity
1959	147,633,670	92,000,000†	89.1	1,400,000†	1.6	8,600,000†	9.3	82,000,000†	62.6
1958	140,742,570	75,879,394	89.1	1,395,985	1.6	7,979,506	9.3	85,254,885	60.6
1957	133,459,150	101,657,776	90.2	2,475,138	2.2	8,582,082	7.6	112,714,996	84.5
1956	128,363,090	102,840,585	89.2	3,227,997	2.8	9,147,567	8.0	115,216,149	89.9
1955	125,828,310	105,359,417	90.0	3,319,517	2.8	8,357,151	7.2	117,036,085	93.0
1954	124,330,410	80,327,494	91.0	2,548,104	2.9	5,436,054	6.1	88,311,652	71.0
1953	117,547,470	100,473,823	90.0	3,855,705	3.5	7,280,191	6.5	111,609,719	94.9
1952	108,587,670	82,846,439	88.9	3,523,677	3.8	6,797,923	7.3	93,168,039	85.8
1951	104,229,650	93,166,518	88.6	4,890,946	4.6	7,142,384	6.8	105,199,848	100.9
1950	99,982,650	86,262,509	89.1	4,534,558	4.7	6,039,008	6.2	96,836,075	96.9
1949	96,120,930	70,248,803	90.1	3,946,656	5.1	3,782,717	4.8	77,978,176	81.1
1948	94,233,460	79,340,157	89.5	4,243,172	4.8	5,057,141	5.7	88,640,470	94.1
1947	91,241,250	76,873,793	90.5	4,232,543	5.0	3,787,785	4.5	84,894,071	93.0
1946	91,890,560	60,711,963	91.2	3,327,737	5.0	2,563,024	3.8	66,602,724	72.5
1945	95,505,280	71,939,602	90.3	4,305,318	5.4	3,456,728	4.3	79,701,648	83.5
1944	93,854,420	80,363,953	89.7	5,039,923	5.6	4,237,724	4.7	89,641,600	95.5
1943	90,589,190	78,621,804	88.5	5,625,492	6.3	4,589,216	5.2	88,836,512	98.1
1942	88,886,550	76,501,957	88.9	5,553,424	6.5	3,976,550	4.6	86,031,931	96.8
1941	85,158,150	74,389,619	89.8	5,578,071	6.7	2,871,569	3.5	82,839,259	97.3
1940	81,619,496	61,573,083	91.9	3,708,573	5.6	1,701,030	2.5	66,982,686	82.1
1939	81,828,958	48,409,800	91.7	3,358,916	6.4	1,029,998	1.9	52,798,714	64.5
1938	80,158,638	29,080,016	91.6	2,106,340	6.6	565,634	1.8	31,751,990	39.6
1937	78,148,374	51,824,979	91.5	3,863,918	6.8	948,048	1.7	56,636,945	72.5
1936	78,164,300	48,760,463	91.2	3,873,472	7.2	866,064	1.6	53,499,999	68.4
1935	78,451,930	34,401,280	90.1	3,175,235	8.3	607,190	1.6	38,183,705	48.7
1934	78,128,416	26,354,838	90.3	2,421,840	8.3	405,246	1.4	29,181,924	37.4
1933	78,614,403	22,827,473	87.7	2,720,246	10.5	472,510	1.8	26,020,229	33.1
1932	78,780,913	13,336,210	87.0	1,715,925	11.2	270,766	1.8	15,322,901	19.5
1931	77,257,803	25,210,714	86.8	3,386,259	11.6	461,988	1.6	29,058,961	37.6
1930	72,895,406	39,255,073	[illegible].1	5,639,714	12.4	688,634	1.5	45,583,421	62.5

* Includes very small tonnages of crucible steel.

† IRON AGE Estimate.
Source: American Iron & Steel Institute



STEEL INDUSTRY

Monthly data on U.S. production of openhearth, bessemer and electric furnace ingots . . . Round-up of world steel output.

WORLD STEEL PRODUCTION

Ingots and Steel for Castings, Thousands of Net Tons

Compiled by THE IRON AGE from the United Nations Bulletin of Statistics, Chambre Syndicate de la Siderurgie Francaise, British Iron and Steel Federation and the American Iron and Steel Institute.

	1959*	1958†	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948
Australia	3,700	3,532	3,373	2,914	2,460	2,117	2,296	1,835	1,606	1,596	1,309	1,425
Austria	2,800	2,638	2,766	2,290	2,009	1,822	1,427	1,165	1,133	1,044	920	713
Belgium	7,000	6,626	6,922	7,028	6,403	5,522	4,997	5,621	5,590	4,155	4,242	4,318
Brazil	1,800	1,764	1,590	1,504	1,286	1,288	1,109	985	930	834	677	545
Canada	5,800	4,359	5,040	5,306	4,529	3,192	4,110	3,703	3,567	3,384	3,186	3,159
China	13,200	8,818	5,499	5,024	3,142	2,397	1,150	....	....	....	....	....
Czechoslovakia	6,600	6,074	5,622	5,382	5,401	4,884	4,883	3,944	3,651	3,190	2,756	2,910
France	16,500	16,111	15,546	14,770	13,880	11,319	11,023	11,979	10,842	9,537	10,086	7,984
Germany West	28,300	25,117	27,014	25,561	23,518	19,221	16,997	17,423	14,888	13,361[2]	10.090[2]	6,127[2]
Germany East	3,500	3,825	3,203	3,020	2,756	2,486	2,666	2,087	1,711	....	....	....
Hungary	1,900	1,793	1,411	1,571	1,764	1,644	1,653	1,539	1,360	1,100	882	794
India	2,400	2,031	1,915	1,947	1,909	1,882	1,691	1,768	1,680	1,610	1,517	1,237
Italy	7,100	6,913	7,482	6,512	5,947	4,638	3,858	3,897	3,362	2,583	2,265	2,342
Japan	17,000	13,358	13,854	12,243	10,370	8,523	8,445	7,703	7,167	5,332	3,352	1,916
Luxembourg	3,900	3,724	3,853	3,809	3,555	3,118	2,931	3,309	3,391	2,702	2,507	2,705
Mexico	1,200	1,090	683	648	579	515	504	561	500	390	380	268
Netherlands	1,800	1,585	1,299	1,159	1,074	1,023	948	755	609	....	....	....
Poland	6,200	6,207	5,846	5,527	4,894	4,370	3,965	3,509	3,078	2,750	2,539	2,116
Rumania	1,400	1,030	941	882	843	693	793	769	720	....	....	....
Saar	4,000	3,814	3,797	3,719	3,849	3,093	2,959	3,112	2,869	2,092	1,936	1,922
South Africa	2,000	1,952	1,848	1,708	1,681	1,523	1,366	1,326	1,045	830	699	750
Spain	2,200	1,720	1,456	1,370	1,337	1,209	985	1,000	902	900	793	604
Sweden	3,100	2,649	2,733	2,646	2,342	2,052	1,969	1,836	1,658	1,587	1,511	1,270
Un. Kingdom	22,400	21,914	24,304	23,138	22,166	20,742	19,723	18,388	17,516	18,240	17,256	16,662
U. S. S. R.	65,000	60,482	56,325	54,443	49,936	45,203	41,800	36,029	34,500	29,800	23,600	18,700
United States	92,000	85,255	112,717	115,216	117,036	88,312	111,610	93,168	105,200	96,836	77,978	88,894
Yugoslavia	1,400	1,234	1,154	977	889	679	568	488	470	....	....	....
Others	3,800	3,385	2,868	2,360	1,816	1,546	2,280	1,524	....	....	....	....
Totals	328,000	299,000	321,061	312,654	297,011	245,013	258,706	229,423	229,945	204,348	173,386	167,107

* Estimated. † Revised. [2] British, French and United States Zones.

WORLD STEEL DATA

Data in the table at left are based on an extensive Iron Age study. Assisting in the study were the Intelligence Dept. of the British Iron & Steel Federation Chambre Syndicate de la Siderugie Francaise, United Nations, American Iron and Steel Institute and Iron Age correspondents throughout the world. Though based on the best available information, the accuracy of Iron Curtain steel data is naturally not of the same order as that of the free world.

U. S. MONTHLY STEEEL INGOT PRODUCTION

Openhearth, Bessemer and Electric Furnace Ingots and Steel for Castings, Net Tons; U. S. Only

	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
Jan.	2,276,596	3,279,473	3,474,353	5,398,326	1,984,815	3,663,004	5,764,723	6,928,083	7,112,106	7,424,522	7,592,603	7,204,312	3,872,887
Feb.	2,521,472	3,169,909	3,379,587	5,050,824	1,942,795	3,448,120	4,525,797	6,237,900	6,512,535	6,824,604	7,194,009	6,652,765	1,392,682
Mar.	3,190,040	3,273,910	3,810,436	5,970,247	2,293,884	3,929,387	4,389,183	7,131,641	7,392,111	7,674,578	7,826,257	7,705,929	6,508,784
Apr.	3,346,922	3,017,177	4,494,782	5,801,540	2,196,413	3,431,600	4,100,474	6,756,949	7,121,291	7,373,703	7,593,688	2,289,887	5,801,195
May	3,875,202	3,009,425	4,614,529	5,894,260	2,661,169	3,372,636	4,967,782	7,053,238	7,382,578	7,549,691	7,702,576	7,449,667	4,072,620
June	3,487,612	2,580,771	4,543,888	4,787,710	1,868,848	3,606,729	5,657,443	6,800,730	7,015,302	7,039,353	7,234,257	6,840,522	5,625,773
July	1,697,879	2,591,240	4,473,940	5,212,832	2,259,677	3,648,639	5,724,625	6,821,682	7,144,958	7,407,876	7,948,387	6,985,571	6,618,683
Aug.	1,574,649	3,331,770	4,782,442	5,580,683	2,903,805	4,341,726	6,186,383	7,000,957	7,227,655	7,586,464	7,498,913	5,735,317	6,924,522
Sept.	1,446,551	3,227,876	4,744,841	4,907,592	3,029,736	4,881,601	6,056,246	6,819,246	7,057,519	7,514,339	7,235,111	5,982,475	6,555,566
Oct.	1,689,272	3,590,945	5,182,430	3,881,819	3,554,912	6,223,126	6,644,542	7,242,683	7,579,514	7,614,117	7,620,885	5,596,776	6,951,742
Nov.	1,836,068	3,599,687	4,941,014	2,464,793	4,072,676	6,292,322	6,469,107	6,969,987	7,179,812	7,371,975	7,278,719	6,200,466	6,457,771
Dec.	2,239,126	3,511,702	5,056,843	1,685,273	3,751,253	5,958,893	6,495,357	7,163,999	7,304,540	7,255,144	7,336,170	6,057,937	5,760,501
Total	29,181,329	38,183,705	53,449,085	56,635,899	31,751,983	52,797,783	66,981,662	82,927,557	86,029,921	88,836,366	89,641,575	79,701,624	68,602,706

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Jan.	7,222,612	7,480,878	8,197,390	7,941,797	8,848,466	9,136,117	9,897,962	7,951,486	8,837,736	10,828,231	11,008,762	6,753,912	9,317,385
Feb.	6,430,401	6,948,017	7,493,942	6,803,032	7,770,407	8,657,210	8,932,779	7,083,237	8,496,934	10,118,995	9,987,206	5,782,323	9,602,938
Mar.	7,318,974	7,616,770	8,401,796	7,497,822	7,076,630	9,404,191	10,168,098	7,289,600	9,981,754	10,924,788	10,589,074	6,254,622	11,567,745
Apr.	7,051,842	6,224,487	7,796,165	8,224,504	8,845,979	7,991,142	9,545,538	6,970,937	9,815,095	10,536,121	9,814,780	5,532,991	11,281,920
May	7,339,014	7,580,642	7,598,990	8,564,207	9,100,155	8,204,596	9,997,080	7,472,738	10,328,316	10,490,376	9,792,323	6,301,159	11,600,581
June	6,977,714	7,265,249	6,504,656	8,143,230	8,662,348	1,639,491	9,404,479	7,363,634	9,746,467	9,721,436	9,391,402	7,127,480	10,907,634
July	6,578,685	7,075,517	5,784,831	8,082,922	8,684,495	1,626,958	9,275,673	6,627,597	9,100,946	1,622,163	8,908,732	6,420,405	5,227,129
Aug.	6,991,152	7,446,834	6,722,771	8,242,174	8,739,095	8,498,687	9,405,580	6,666,907	9,594,545	8,122,597	9,233,890	7,286,003	1,439,277
Sept.	6,797,457	7,424,844	6,597,935	8,204,997	8,660,357	9,062,105	8,883,428	6,807,483	9,882,325	10,422,659	8,977,906	7,610,372	1,535,017
Oct.	7,570,152	7,996,895	928,347	8,752,686	9,121,886	9,806,830	9,462,722	7,701,553	10,501,050	11,048,513	9,197,717	8,839,778	1,704,533
Nov.	7,242,427	7,797,558	4,223,129	8,023,393	8,799,352	9,438,886	8,690,052	8,089,427	10,247,398	10,555,500	8,392,919	8,569,318	7,262,000†
Dec.	7,375,641	7,780,779	7,728,224	8,355,311	8,890,678	9,690,162	7,946,328	8,287,073	10,503,519	10,837,545	7,420,285	8,710,522	10,554,000*
Total	84,894,071	88,640,470	77,978,176	96,836,075	105,199,846	93,153,375	111,609,719	88,311,652	117,036,085	115,216,149	112,714,996	85,254,885	92,000,000*

* Estimate. † Preliminary.

Source: American Iron and Steel Institute.

Financial analysis of steel industry . . . Twenty-nine steel producers covered represent 93.2 pct of U.S. ingot capacity.

FINANCIAL ANALYSIS OF THE STEEL INDUSTRY

For years 1954 through 1958. Data Cover 29 Companies Representing 93.2 Pct of U. S. Ingot Capacity

COMPANY	Year	Ingot Capacity Net Tons	Ingot Production Net Tons	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Income	Net Income Percent of Sales	Earnings Per Common Share	Invested Capital
U. S. Steel Corp.	1958	40,212,000	23,818,889	59.23	16,992,305	$3,472,177,091	$285,000,000	$301,558,231	8.7	$5.13	$3,601,550,892
	1957	39,582,000	33,738,000	85.2	23,414,000	4,413,806,173	408,000,000	419,406,956	9.5	7.33	3,214,366,449
	1956	39,582,000	33,402,000	85.2	23,911,000	4,228,877,241	331,000,000	348,098,916	8.2	6.01	3,008,996,483
	1955	38,877,000	35,309,000	90.8	25,506,000	4,097,680,287	386,000,000	370,099,353	9.0	6.44	2,868,655,585
	1954	38,715,000	28,355,000	73.2	20,239,000	3,250,369,279	190,000,000	195,417,611	6.0	6.46	2,672,832,918
Bethlehem Steel Corp.	1958	23,000,000	13,393,034	58.2	9,686,228	2,024,282,732	131,000,000	137,741,946	6.8	2.91	1,786,505,120
	1957	20,500,000	19,123,201	93.3	13,535,705	2,624,913,123	175,000,000	191,025,933	7.3	4.13	1,758,004,876
	1956	20,000,000	18,322,308	91.6	13,198,783	2,343,478,150	147,000,000	161,411,625	6.9	15.33	1,608,356,409
	1955	19,100,000	18,820,912	98.5	13,553,823	2,114,599,636	181,000,000	180,191,708	8.5	18.09	1,522,975,045
	1954	18,500,000	13,810,076	74.6	10,226,752	1,667,377,179	119,000,000	132,837,154	8.0	13.18	1,232,094,615
Republic Steel Corp.	1958	12,242,000	6,430,283	52.5	4,463,595	910,382,817	60,500,000	61,921,680	6.8	3.96	811,474,121
	1957	11,047,000	8,484,615	76.8	6,211,485	1,227,257,507	89,600,000	85,014,422	6.9	5.45	773,190,575
	1956	10,202,000	9,348,898	91.1	6,783,307	1,244,214,346	94,700,000	90,406,665	7.3	5.83	698,248,994
	1955	10,262,000	9,680,121	97.1	6,988,782	1,188,559,765	84,000,000	86,271,491	7.3	5.59	650,126,815
	1954	10,262,000	6,972,812	69.8	5,012,330	846,310,670	49,900,000	52,875,164	6.2	7.10	629,318,251
Jones & Laughlin Steel Corp.	1958	7,500,000	4,947,000	66.0	3,357,000	654,080,000	18,090,000	23,198,000	3.6	2.79	658,380,000
	1957	6,900,000	6,048,000	88.0	4,272,000	837,568,000	39,901,000	45,452,000	5.4	5.65	647,694,000
	1956	6,166,500	5,997,000	97.0	4,341,000	742,642,000	39,380,000	45,122,000	6.1	6.63	581,426,000
	1955	6,166,500	6,190,000	100.0	4,418,000	696,538,000	46,500,000	50,104,000	7.2	7.73	526,212,000
	1954	6,166,500	4,570,000	74.0	3,203,000	492,941,006	22,543,000	25,032,000	5.1	3.80	497,439,000
National Steel Corp.	1958	6,800,000	4,478,000	66.0	....	539,957,294	35,000,000	35,827,414	6.64	4.80	566,889,286
	1957	6,200,000	5,326,425	86.0	....	640,967,342	43,550,000	45,518,884	7.1	6.13	551,004,815
	1956	6,000,000	....	....	....	664,251,090	47,000,000	52,502,422	7.9	7.09	532,312,345
	1955	6,000,000	....	....	....	622,018,919	48,275,000	48,289,453	7.8	6.54	452,911,967
	1954	6,000,000	....	....	....	484,058,380	27,750,000	30,334,871	6.3	4.12	427,082,106
Youngstown Sheet & Tube Co.	1958	6,500,000	3,659,482	56.3	2,542,714	506,959,574	20,170,000	21,501,320	4.3	6.23	553,400,772
	1957	6,240,000	5,137,834	82.3	3,593,375	679,885,073	39,488,000	42,508,579	6.25	12.35	531,846,126
	1956	5,750,000	5,406,016	94.0	3,839,224	684,041,021	37,329,000	43,174,587	6.31	12.62	498,364,512
	1955	5,520,000	5,571,556	100.9	3,944,492	626,232,840	41,867,500	41,701,140	6.8	12.34	462,890,771
	1954	5,520,000	3,868,525	70.1	2,606,540	433,406,272	12,104,000	20,182,500	4.7	6.02	432,764,332
Armco Steel Corp.	1958	6,394,200	4,506,127	70.5	3,640,620	867,390,909	55,860,180	57,512,151	6.63	3.89	744,472,289
	1957	5,950,000	5,406,646	90.9	3,807,723	776,736,401	54,521,286	55,044,509	7.09	4.59	603,150,801
	1956	5,150,000	5,220,147	101.4	3,936,105	761,800,102	63,290,322	65,593,182	8.61	6.03	480,309,799
	1955	4,950,000	5,099,905	103.0	4,003,532	692,683,234	66,613,787	64,350,609	9.3	6.05	444,015,755
	1954	4,902,000	4,448,772	90.8	3,171,401	532,045,314	42,522,317	41,100,266	7.7	7.86	403,749,452
Inland Steel Co.	1958	5,800,000	4,714,904	81.3	3,384,209	661,253,596	42,440,000	47,869,042	7.3	8.32	604,801,130
	1957	5,500,000	5,502,000	100.0	4,041,130	772,380,683	60,555,000	58,876,875	7.7	10.34	582,774,294
	1956	5,200,000	4,915,576	94.5	3,852,719	731,767,767	55,142,000	52,998,726	7.3	9.43	497,757,696
	1955	5,000,000	5,189,509	103.8	3,954,567	663,317,374	53,050,000	52,466,098	8.0	9.52	416,415,101
	1954	4,700,000	4,522,257	96.2	3,392,659	537,024,479	37,930,000	41,287,152	7.7	7.92	287,258,955
Colorado Fuel & Iron Corp.	1958	2,836,500	1,706,308	60.16	1,355,084	276,163,902	2,468,500	2,147,223	0.78	0.47	195,728,675
	1957	2,799,500	2,163,594	77.3	1,815,406	340,755,160	14,926,000	14,236,851	4.18	4.04	197,115,766
	1956	2,471,500	2,401,231	97.16	2,134,490	341,630,224	16,891,800	16,662,653	4.9	4.74	189,184,650
	1955	2,471,500	1,936,402	78.35	1,627,587	257,543,050	10,681,800	10,887,163	4.2	3.79	170,325,365
	1954	2,469,035	1,845,693	74.8	1,687,950	250,235,696	6,125,000	7,051,729	2.8	2.46	167,132,675
Wheeling Steel Corp.	1958	2,400,000	1,580,214	65.8	1,119,363	221,009,355	6,954,000	8,899,267	4.03	3.69	237,440,675
	1957	2,200,000	1,828,534	83.1	....	249,756,955	10,116,000	12,077,696	4.84	5.32	237,041,083
	1956	2,130,000	1,994,745	93.7	....	259,554,918	18,630,000	17,672,276	6.81	8.20	236,452,198
	1955	2,130,000	2,057,288	96.6	....	249,455,016	18,480,000	17,295,711	6.9	8.12	229,796,667
	1954	2,130,000	1,589,643	74.6	....	190,224,955	8,483,000	9,595,740	5.0	5.48	205,866,412
Sharon Steel Corp.	1958	1,989,000	779,281	39.78	517,277	99,970,977	−190,000	224,942	0.22	0.20	90,264,442
	1957	1,898,000	1,204,283	63.5	856,503	151,651,824	3,606,000	4,046,773	2.7	3.68	92,062,963
	1956	1,763,000	1,506,660	85.6	1,126,612	180,044,408	6,473,000	6,905,539	3.8	6.28	82,716,190
	1955	1,550,000	1,528,686	98.6	1,092,593	173,095,949	7,840,000	7,987,622	4.6	7.26	73,098,951
	1954	1,550,000	846,515	54.6	611,668	99,347,910	1,865,000	3,134,864	3.2	2.85	68,711 329
McLouth Steel Corp.	1958	1,574,000	1,396,103	88.70	1,047,029	171,590,704	2,430,000	9,998,374	5.83	5.65	162,564,480
	1957	1,574,000	1,534,240	97.5	1,122,335	179,458,165	5,562,000	9,409,977	5.2	5.37	153,069,766
	1956	1,380,000	1,372,592	99.5	1,092,877	163,906,619	9,110,000	8,806,258	5.4	5.01	123,232,929
	1955	1,200,000	....	....	....	144,987,476	7,375,000	8,148,342	5.6	5.66	127,716,528
	1954	960,000	434,320	56.4	368,667	....	2,090,000	1,694,890	....	1.42	132,513,536
Kaiser Steel Corp.	1958	1,536,000	1,466,278	95.5	940,500	181,385,288	2,175,000	5,422,271	3.0	0.76	407,970,265
	1957	1,536,000	1,590,322	103.5	1,043,620	208,619,403	9,300,000	21,438,507	10.3	5.91	373,126,516
	1956	1,536,000	1,617,681	105.3	1,140,776	201,489,824	12,055,000	23,571,852	11.7	6.57	245,177,553
	1955	1,536,000	1,432,742	93.3	929,556	136,148,919	....	5,471,236	4.2	1.08	245,329,442
	1954	1,536,000	1,382,877	90.0	933,843	128,491,032	3,325,000	7,926,866	6.2	1.75	245,984,849
Detroit Steel Corp.	1958	1,500,000	447,613	30.0	386,093	61,781,666	1,250,000	1,153,692	1.9	0.31	81,723,218
	1957	1,500,000	562,477	37.0	480,911	82,458,616	3,346,000	3,004,382	3.6	0.90	84,844,546
	1956	1,290,000	1,032,237	80.0	909,261	123,616,057	9,015,000	8,747,092	7.1	2.78	87,696,369
	1955	1,290,000	888,443	68.9	787,788	101,803,010	6,715,966	6,317,860	6.2	2.07	85,693,209
	1954	660,000	442,753	67.1	371,081	51,688,448	71,338	1,182,528	2.3	0.49	40,265,485
Crucible Steel Co. of America	1958	1,424,530	710,823	49.9	459,311	186,363,233	2,315,000	4,274,793	2.3	1.13	142,135,179
	1957	1,423,400	....	....	....	235,938,306	5,630,000	6,543,594	2.8	1.73	141,257,392
	1956	1,423,400	....	....	....	263,922,898	12,910,000	12,767,625	4.8	7.02	140,460,520
	1955	1,351,400	1,222,176	90.4	....	237,715,380	15,570,000	13,208,602	5.6	8.05	128,847,921
	1954	1,351,400	....	....	....	160,621,738	4,398,000	3,705,952	2.3	2.83	119,995,023

Financial analysis of steel industry showing capacity, sales earnings data, shipments, production, etc., by company.

FINANCIAL ANALYSIS (Continued)

COMPANY	Year	Ingot Capacity Net Tons	Ingot Production Net Tons	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Income	Net Income Percent of Sales	Earnings Per Common Share	Invested Capital
Pittsburgh Steel Co.	1958	1,416,000	955,593	61.3	725,653	$134,475,314	$−1,418,000	$−865,593	−0.65	$−1.37	$120,019,201
	1957	1,320,000	1,223,534	91.0	1,018,756	183,260,331	1,516,000	4,155,000	2.28	1.80	124,195,837
	1956	1,320,000	1,139,882	86.4	1,077,610	179,133,961	3,404,000	6,225,000	3.49	3.24	125,912,965
	1955	1,320,000	1,303,503	98.8	1,132,437	177,707,556	4,372,000	7,515,470	4.3	4.31	118,397,226
	1954	1,320,000	1,070,386	76.2	784,420	124,489,418	973,000	2,170,694	1.8	0.62	116,385,912
Granite City Steel Company	1958	1,200,000	1,106,556	87.8	879,500	125,272,603	10,127,000	9,373,580	7.5	4.36	123,871,072
	1957	1,200,000	1,116,698	93.1	894,052	123,763,490	10,829,000	9,984,451	8.1	4.64	118,827,377
	1956	1,080,000	1,151,620	107.0	1,057,932	137,131,233	15,800,000	15,109,411	11.0	7.04	113,844,912
	1955	1,080,000	1,091,389	101.0	961,101	116,293,657	13,703,700	12,610,820	11.0	6.05	102,436,342
	1954	1,080,000	634,909	58.8	559,112	69,265,197	4,400,700	4,012,192	5.8	2.04	90,232,973
Allegheny Ludium Steel Corp.	1958	864,200	418,254	48.4	270,213	202,572,808	6,174,000	5,844,803	2.89	1.52	141,392,570
	1957	864,200	495,280	57.3	352,989	267,647,586	13,441,000	11,651,851	4.35	3.02	144,990,974
	1956	864,200	666,918	77.2	453,822	287,078,052	16,867,000	15,261,090	5.32	4.04	140,683,981
	1955	864,200	683,195	79.1	464,231	255,587,054	16,554,000	14,985,660	5.9	8.25	121,125,921
	1954	864,200	431,068	49.9	305,208	170,056,405	4,459,000	4,246,083	2.5	2.30	80,073,450
Barium Steel Corp.	1958	846,760	226,110	26.70		27,614,634	−2,185,396	−1,966,545	−7.12	−1.90	32,168,100
	1957	846,760	585,993	69.0		83,885,112	3,536,000	3,062,998	3.65	0.74	35,575,755
	1956	893,000	732,600	82.0		119,536,637	8,118,951	7,009,956	5.86	1.98	37,808,634
	1955	893,000	520,900	58.3		75,084,700	995,255	655,319	0.9	0.20	22,822,552
	1954	893,000	237,000	26.5		53,484,604	1,772,500	441,212	0.8	0.14	22,222,682
Northwestern Steel & Wire Corp.	1958	825,000	473,561	57.4	380,518	60,468,595	5,840,000	5,049,890	8.4	2.02	39,205,142
	1957	825,000	703,752	85.3	548,419	78,105,122	6,030,000	5,225,418	6.7	2.09	36,025,803
	1956	825,000	692,326	83.9	585,816	74,157,804	5,760,000	5,076,959	6.8	2.07	32,971,850
	1955	825,000	502,443	60.9	391,675	51,403,405	4,610,000	4,131,969	8.0	5.05	29,585,467
	1954	825,000	308,780	37.4	246,170	35,628,171	1,065,000	1,018,754	2.9	1.25	17,127,634
Alan Wood Steel Co.	1958	800,000	505,341	63.17	335,571	54,163,265	997,000	2,109,203	3.89	2.68	38,227,292
	1957	800,000	655,536	81.9	437,819	67,889,893	1,047,000	2,054,046	3.0	2.60	38,330,232
	1956	625,000	713,859	109.1	495,098	69,330,353	2,024,000	3,095,727	4.5	4.04	36,653,835
	1955	625,000	665,908	106.5	462,046	58,375,609	1,619,000	2,551,530	4.4	3.32	35,951,285
	1954	625,000	345,918	55.3	241,288	36,085,476	216,000	1,246,251	3.4	1.42	36,647,492
Lukens Steel Co.	1958	750,000	602,996	80.4	404,770	99,256,110	4,255,000	4,181,986	4.2	4.38	63,776,747
	1957	750,000	758,212	101.1	566,521	130,473,207	11,687,000	10,119,998	7.8	10.61	43,052,618
	1956	750,000	703,434	93.8	512,735	105,173,925	7,675,000	7,504,889	7.1	23.60	39,593,684
	1955	750,000	691,444	92.2	490,569	79,307,572	2,400,000	1,731,238	2.2	5.44	34,334,613
	1954	675,000	631,834	93.6	455,153	74,954,710	2,065,000	2,014,791	2.7	6.33	33,589,833
Copperweld Steel Co.	1958	660,000				93,526,153	2,175,000	2,081,114	2.2	1.76	56,065,725
	1957	660,000				121,094,351	2,500,000	2,769,855	2.3	2.41	55,480,326
	1956	660,000				100,541,926	4,220,000	3,440,872	3.4	4.08	40,267,983
	1955	618,380				78,490,150	2,990,000	2,365,459	3.0	2.81	35,574,896
	1954	618,380				49,694,295	520,000	927,065	1.9	1.32	29,284,898
Lone Star Steel Co.	1958	660,000	384,475	58.3	192,000	45,804,182	None	1,064,697	2.0	0.33	99,899,714
	1957	550,000	666,853	121.2	469,228	95,340,258	11,570,000	11,329,508	11.9	3.90	103,203,078
	1956	550,000	629,579	114.4	485,269	88,650,577	11,000,000	10,151,363	11.5	3.84	100,373,570
	1955	550,000	556,304	101.0	442,762	74,489,168	4,665,000	4,759,086	6.4	1.80	102,838,289
Acme Steel Co.	1958	608,000	329,716		557,250	128,817,000	5,113,000	5,307,000	4.12	1.89	97,205,000
	1957	608,000	383,550	63.0	717,395	147,749,000	6,186,000	6,016,000	4.07	2.40	89,457,000
Laclede Steel Co.	1958	600,000	454,693	75.7	350,324	63,159,247	4,075,000	3,704,251	5.86	17.96	32,137,753
	1957	500,000	452,005	86.9	352,526	62,226,543	4,675,000	3,838,646	6.17	18.61	30,283,503
	1956	500,000	505,575	101.1	398,181	66,509,030	4,575,000	4,086,071	6.14	19.81	26,832,561
	1955	500,000	473,708	94.7	386,408	58,191,338	4,700,000	4,047,053	7.0	19.62	24,658,700
	1954	500,000	396,023	79.2	311,140	45,364,073	3,050,000	2,943,150	6.5	14.27	22,106,598
Keystone Steel & Wire Co.	1958	450,000	366,793	81.51	291,734	61,198,258	6,992,003	6,736,519	11.01	3.59	41,294,522
	1957	450,000	395,236	87.8	290,354	59,739,437	6,393,924	6,498,163	10.88	3.47	38,308,003
	1956	450,000	438,364	97.41	353,019	66,629,700	7,993,443	8,013,050	12.03	4.27	35,559,840
	1955	425,000	416,090	97.90	344,414	62,020,363	8,830,268	8,768,519	14.1	4.68	31,296,790
	1954	425,000	334,444	78.7	275,229	49,332,276	6,981,536	6,114,772	12.4	3.26	26,278,271
Continental Steel Corp.	1958	420,000	308,248	73.4	253,835	46,798,182	4,400,000	3,887,634	8.31	7.53	27,570,052
	1957	420,000	338,508	80.6	231,880	42,657,749	3,130,000	2,756,655	6.46	5.34	25,689,821
	1956	394,000	368,059	93.4	272,996	46,703,332	2,810,000	2,793,574	5.98	5.57	24,135,915
	1955	394,000	384,380	97.6	285,972	44,881,747	2,760,000	3,022,143	6.7	6.02	22,921,084
	1954	394,000	336,149	85.3	232,108	35,661,856	1,600,000	1,993,337	5.6	3.97	21,603,024
Atlantic Steel Co.	1958	400,000	146,643	36.6	129,046	22,083,434	241,000	353,235	1.60	0.77	12,892,199
	1957	400,000	229,807	57.4	175,453	28,115,864	327,000	348,182	1.24	0.76	12,584,961
GRAND TOTALS	1958	132,208,190	79,700,000	60.6	56,800,000	$11,999,934,892	$712,590,287	$766,112,120	6.5	$3.62	$11,571,025,633
	1957	125,043,860	105,500,000	84.5	74,300,000	14,904,100,684	992,530,516	1,093,416,709	7.3	5.65	10,836,555,256
	1956	119,410,000	107,000,000*	89.8	77,300,000*	14,329,463,893	1,050,902,715	1,044,506,967	7.2	6.96	9,790,957,624
	1955	117,257,517	109,000,000	93.0	78,800,000	13,225,990,770	1,027,297,914	1,034,621,961	7.8	7.16	9,132,827,147
	1954	115,324,652	81,900,000	71.0	58,700,000	9,977,835,497	553,857,391	600,383,984	6.0	5.99	8,205,155,029

* Estimated on operating rate.

Steel Prices: Hot and cold rolled sheet and strip, galvanized sheets, tinplate and high-speed tool steel.

COLD-ROLLED STRIP

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	3.55	4.00	4.20	4.75	4.65	5.10
Feb.	3.55	4.00	4.21	4.75	4.65	5.10
Mar.	3.55	4.00	4.21	4.75	4.65	5.10
Apr.	3.55	4.00	4.21	4.75	4.65	5.10
May	3.53	4.00	4.21	4.75	4.65	5.10
June	3.53	4.00	4.21	4.75	4.65	5.25
July	3.85	4.00	4.21	4.75	4.74	5.45
Aug.	4.00	4.00	4.21	4.75	5.10	5.45
Sept.	4.00	4.00	4.21	4.75	5.10	5.45
Oct.	4.00	4.00	4.21	4.75	5.10	5.45
Nov.	4.00	4.00	4.21	4.75	5.10	5.45
Dec.	4.00	4.06	4.75	4.75	5.10	5.45
Average	3.76	4.01	4.25	4.75	4.85	5.29

	1954	1955	1956	1957	1958	1959
Jan.	5.45	5.75	6.25	6.85	7.170	7.425
Feb.	5.45	5.75	6.25	6.85	7.170	7.425
Mar.	5.45	5.75	6.25	6.85	7.170	7.425
Apr.	5.45	5.75	6.25	6.85	7.170	7.425
May	5.45	5.75	6.25	6.85	7.170	7.425
June	5.45	5.75	6.25	6.85	7.170	7.425
July	5.73	6.12	6.25	7.17	7.170	7.425
Aug.	5.75	6.25	6.61	7.17	7.425	7.425
Sept.	5.75	6.25	6.85	7.17	7.425	7.425
Oct.	5.75	6.25	6.85	7.17	7.425	7.425
Nov.	5.75	6.25	6.85	7.17	7.425	7.425
Dec.	5.75	6.25	6.85	7.17	7.425	7.425
Average	5.60	5.98	6.48	7.01	7.276	7.425

COLD-ROLLED SHEETS

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	3.55	4.00	4.10	4.35	4.35	4.575
Feb.	3.55	4.00	4.10	4.35	4.35	4.575
Mar.	3.55	4.00	4.10	4.35	4.35	4.575
Apr.	3.55	4.00	4.10	4.35	4.35	4.575
May	3.49	4.00	4.10	4.35	4.35	4.575
June	3.49	4.00	4.10	4.35	4.35	4.660
July	3.62	4.00	4.10	4.35	4.395	4.775
Aug.	4.00	4.00	4.10	4.35	4.575	4.775
Sept.	4.00	4.00	4.10	4.35	4.575	4.775
Oct.	4.00	4.00	4.10	4.35	4.575	4.775
Nov.	4.00	4.00	4.10	4.35	4.575	4.775
Dec.	4.00	4.04	4.35	4.35	4.575	4.775
Average	3.73	4.00	4.12	4.35	4.449	4.682

	1954	1955	1956	1957	1958	1959
Jan.	4.775	4.95	5.325	5.75	6.050	6.275
Feb.	4.775	4.95	5.325	5.75	6.050	6.275
Mar.	4.775	4.95	5.325	5.75	6.050	6.275
Apr.	4.775	4.95	5.325	5.75	6.050	6.275
May	4.775	4.95	5.325	5.75	6.050	6.275
June	4.775	4.95	5.325	5.75	6.050	6.275
July	4.939	5.231	5.325	6.05	6.050	6.275
Aug.	4.95	5.325	5.580	6.05	6.275	6.275
Sept.	4.95	5.325	5.75	6.05	6.275	6.275
Oct.	4.95	5.325	5.75	6.05	6.275	6.275
Nov.	4.95	5.325	5.75	6.05	6.275	6.275
Dec.	4.95	5.325	5.75	6.05	6.275	6.275
Average	4.862	5.127	5.488	5.90	6.143	6.275

GALVANIZED SHEETS†

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	3.95	4.40	4.40	4.80	4.80	5.075
Feb.	3.95	4.40	4.40	4.80	4.80	5.075
Mar.	3.95	4.40	4.40	4.80	4.80	5.075
Apr.	3.95	4.40	4.40	4.80	4.80	5.075
May	3.91	4.40	4.40	4.80	4.80	5.075
June	3.91	4.40	4.40	4.80	4.80	5.160
July	4.03	4.40	4.40	4.80	4.855	5.275
Aug.	4.40	4.40	4.40	4.80	5.075	5.275
Sept.	4.40	4.40	4.40	4.80	5.075	5.275
Oct.	4.40	4.40	4.40	4.80	5.075	5.275
Nov.	4.40	4.40	4.40	4.80	5.075	5.275
Dec.	4.40	4.40	4.80	4.80	5.075	5.275
Average	4.13	4.40	4.43	4.80	4.919	5.182

	1954	1955	1956	1957	1958	1959
Jan.	5.275	5.45	5.85	6.30	6.600	6.875
Feb.	5.275	5.45	5.85	6.30	6.600	6.875
Mar.	5.275	5.45	5.85	6.30	6.600	6.875
Apr.	5.275	5.45	5.85	6.30	6.600	6.875
May	5.275	5.45	5.85	6.30	6.600	6.875
June	5.275	5.45	5.85	6.30	6.600	6.875
July	5.439	5.75	5.85	6.60	6.600	6.875
Aug.	5.45	5.85	6.120	6.60	6.875	6.875
Sept.	5.45	5.85	6.120	6.60	6.875	6.875
Oct.	5.45	5.85	6.30	6.60	6.875	6.875
Nov.	5.45	5.85	6.30	6.60	6.875	6.875
Dec.	5.45	5.85	6.30	6.60	6.875	6.875
Average	5.362	5.64	6.023	6.45	6.715	6.875

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† Hot-dipped, 10 ga.

HOT-ROLLED SHEETS

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	2.80	3.28	3.35	3.60	3.60	3.775
Feb.	2.80	3.28	3.35	3.60	3.60	3.775
Mar.	2.80	3.28	3.35	3.60	3.60	3.775
Apr.	2.80	3.26	3.35	3.60	3.60	3.775
May	2.77	3.25	3.35	3.60	3.60	3.775
June	2.77	3.25	3.35	3.60	3.60	3.838
July	2.89	3.25	3.35	3.60	3.635	3.925
Aug.	3.28	3.25	3.35	3.60	3.775	3.925
Sept.	3.28	3.25	3.35	3.60	3.775	3.925
Oct.	3.28	3.25	3.35	3.60	3.775	3.925
Nov.	3.28	3.25	3.35	3.60	3.775	3.925
Dec.	3.28	3.29	3.60	3.60	3.775	3.925
Average	3.00	3.26	3.37	3.60	3.676	3.855

	1954	1955	1956	1957	1958	1959
Jan.	3.925	4.05	4.325	4.675	4.925	5.100
Feb.	3.925	4.05	4.325	4.675	4.925	5.100
Mar.	3.925	4.05	4.325	4.675	4.925	5.100
Apr.	3.925	4.05	4.325	4.675	4.925	5.100
May	3.925	4.05	4.325	4.675	4.925	5.100
June	3.925	4.05	4.325	4.675	4.925	5.100
July	4.042	4.26	4.325	4.925	4.925	5.100
Aug.	4.05	4.325	4.535	4.925	5.100	5.100
Sept.	4.05	4.325	4.675	4.925	5.100	5.100
Oct.	4.05	4.325	4.675	4.925	5.100	5.100
Nov.	4.05	4.325	4.675	4.925	5.100	5.100
Dec.	4.05	4.325	4.675	4.925	5.100	5.100
Average	3.987	4.189	4.459	4.800	4.995	5.100

HOT-ROLLED STRIP

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	2.80	3.28	3.25	3.50	3.50	3.725
Feb.	2.80	3.28	3.25	3.50	3.50	3.725
Mar.	2.80	3.28	3.25	3.50	3.50	3.725
Apr.	2.80	3.26	3.25	3.50	3.50	3.725
May	2.80	3.25	3.25	3.50	3.50	3.725
June	2.80	3.25	3.25	3.50	3.50	3.810
July	2.90	3.25	3.25	3.50	3.545	3.925
Aug.	3.28	3.25	3.25	3.50	3.725	3.925
Sent.	3.28	3.25	3.25	3.50	3.725	3.925
Oct.	3.28	3.25	3.25	3.50	3.725	3.925
Nov.	3.28	3.25	3.25	3.50	3.725	3.925
Dec.	3.28	3.25	3.50	3.50	3.725	3.925
Average	3.03	3.26	3.27	3.50	3.606	3.832

	1954	1955	1956	1957	1958	1959
Jan.	3.925	4.05	4.325	4.675	4.925	5.100
Feb.	3.925	4.05	4.325	4.675	4.925	5.100
Mar.	3.925	4.05	4.325	4.675	4.925	5.100
Apr.	3.925	4.05	4.325	4.675	4.925	5.100
May	3.925	4.05	4.325	4.675	4.925	5.100
June	3.925	4.05	4.325	4.675	4.925	5.100
July	4.042	4.256	4.325	4.925	4.925	5.100
Aug.	4.05	4.325	4.535	4.925	5.100	5.100
Sept.	4.05	4.325	4.675	4.925	5.100	5.100
Oct.	4.05	4.325	4.675	4.925	5.100	5.100
Nov.	4.05	4.325	4.675	4.925	5.100	5.100
Dec.	4.05	4.325	4.675	4.925	5.100	5.100
Average	3.987	4.181	4.459	4.80	4.998	5.100

STEEL PLATES

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	2.95	3.50	3.50	3.70	3.70	3.90
Feb.	2.95	3.50	3.50	3.70	3.70	3.90
Mar.	2.95	3.50	3.50	3.70	3.70	3.90
Apr.	2.95	3.50	3.50	3.70	3.70	3.90
May	2.93	3.40	3.50	3.70	3.70	3.90
June	2.93	3.40	3.50	3.70	3.70	3.98
July	3.07	3.40	3.50	3.70	3.74	4.10
Aug.	3.50	3.40	3.50	3.70	3.90	4.10
Sept.	3.50	3.40	3.50	3.70	3.90	4.10
Oct.	3.50	3.40	3.50	3.70	3.90	4.10
Nov.	3.50	3.40	3.50	3.70	3.90	4.10
Dec.	3.50	3.44	3.70	3.70	3.90	4.10
Average	3.19	3.43	3.52	3.70	3.78	4.01

	1954	1955	1956	1957	1958	1959
Jan.	4.10	4.225	4.50	4.85	5.12	5.30
Feb.	4.10	4.225	4.50	4.85	5.12	5.30
Mar.	4.10	4.225	4.50	4.85	5.12	5.30
Apr.	4.10	4.225	4.50	4.85	5.12	5.30
May	4.10	4.225	4.50	4.85	5.12	5.30
June	4.10	4.225	4.50	4.85	5.12	5.30
July	4.217	4.431	4.50	5.10	5.12	5.30
Aug.	4.225	4.50	4.71	5.10	5.30	5.30
Sept.	4.225	4.50	4.85	5.10	5.30	5.30
Oct.	4.225	4.50	4.85	5.10	5.30	5.30
Nov.	4.225	4.50	4.85	5.10	5.30	5.30
Dec.	4.225	4.50	4.85	5.10	5.30	5.30
Average	4.162	4.356	4.63	4.98	5.195	5.30

HIGH SPEED TOOL STEEL

18-4-1, Cents Per Pound

	1953	1954	1955	1956	1957	1958	1959
Jan.	157.57	152.50	154.00	160.00	168.00	179.50	184.00
Feb.	157.57	148.00	154.00	160.00	168.00	179.00	184.00
Mar.	157.57	148.00	154.00	160.00	168.00	179.50	184.00
Apr.	157.57	148.00	154.00	160.00	168.00	179.50	184.00
May	157.57	148.00	154.00	160.00	168.00	179.50	184.00
June	161.11	148.00	154.00	160.00	168.00	179.50	184.00
July	166.00	151.00	157.00	160.00	168.00	179.50	184.00
Aug.	166.00	154.00	160.00	164.80	168.00	184.00	184.00
Sept.	166.00	154.00	160.00	168.00	168.00	184.00	184.00
Oct.	166.00	154.00	160.00	168.00	174.00	184.00	184.00
Nov.	166.00	154.00	160.00	168.00	174.00	184.00	184.00
Dec.	166.00	154.00	160.00	168.00	174.00	184.00	184.00
Avg.	162.08	151.13	156.75	163.07	169.50	181.37	184.00

TINPLATE AT PITTSBURGH Dollars Per Base Box, 1.50-lb Coating

	1938*	1947*	1948	1949	1950	1951	1952
Jan.	$5.35	$5.75	$6.80	$7.75	$7.50	$8.10	$8.70
Feb.	5.35	5.75	6.80	7.75	7.50	8.70	8.70
Mar.	5.35	5.75	6.80	7.75	7.50	8.70	8.70
Apr.	5.35	5.75	6.80	7.75	7.50	8.70	8.70
May	5.35	5.75	6.70	7.75	7.50	8.70	8.70
June	5.35	5.75	6.70	7.75	7.50	8.70	8.70
July	5.35	5.75	6.72	7.75	7.50	8.70	8.75
Aug.	5.35	5.75	6.80	7.75	7.50	8.70	8.95
Sept.	5.35	5.75	6.80	7.75	7.50	8.70	8.95
Oct.	5.35	5.75	6.80	7.75	7.50	8.70	8.95
Nov.	5.18	5.75	6.80	7.75	7.50	8.70	8.95
Dec.	5.00	5.75	6.80	7.75	7.50	8.70	8.95
Average	5.31	5.75	6.77	7.75	7.50	8.67	8.81

	1953	1954	1955	1956	1957	1958	1959
Jan.	$8.95	$8.95	$9.05	$9.45	$9.95	$10.30	$10.65
Feb.	8.95	8.95	9.05	9.45	9.95	10.30	10.65
Mar.	8.95	8.95	9.05	9.45	9.95	10.30	10.65
Apr.	8.95	8.95	9.05	9.45	9.95	10.30	10.65
May	8.95	8.95	9.05	9.85	10.30	10.30	10.65
June	8.95	8.95	9.05	9.85	10.30	10.30	10.65
July	8.95	8.95	9.05	9.85	10.30	10.30	10.65
Aug.	8.95	8.95	9.05	9.85	10.30	10.30	10.65
Sept.	8.95	8.95	9.05	9.85	10.30	10.30	10.65
Oct.	8.95	9.05	9.45	9.85	10.30	10.30	10.65
Nov.	8.95	9.05	9.45	9.95	10.30	10.65	10.65
Dec.	8.95	9.05	9.45	9.95	10.30	10.65	10.65
Average	8.95	8.98	9.15	9.733	10.18	10.36	10.65

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* 1939-1946 = $5.00.

Steel Prices: Hot rolled and cold-finished bars, wire, structurals, rails, pipe and stainless steel sheets.

MERCHANT BARS

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	2.90	3.45	3.45	3.70	3.70	3.95
Feb.	2.90	3.45	3.45	3.70	3.70	3.95
Mar.	2.90	3.43	3.45	3.70	3.70	3.95
Apr.	2.90	3.35	3.45	3.70	3.70	3.95
May	2.87	3.35	3.45	3.70	3.70	3.95
June	2.87	3.35	3.45	3.70	3.70	4.04
July	3.00	3.35	3.45	3.70	3.75	4.15
Aug.	3.45	3.35	3.45	3.70	3.95	4.15
Sept.	3.45	3.35	3.45	3.70	3.95	4.15
Oct.	3.45	3.35	3.45	3.70	3.95	4.15
Nov.	3.45	3.39	3.45	3.70	3.95	4.15
Dec.	3.45	3.38	3.70	3.70	3.95	4.15
Average	3.13	3.37	3.47	3.70	3.79	4.06

	1954	1955	1956	1957	1958	1959
Jan.	4.15	4.30	4.65	5.075	5.425	5.675
Feb.	4.15	4.30	4.65	5.075	5.425	5.675
Mar.	4.15	4.30	4.65	5.075	5.425	5.675
Apr.	4.15	4.30	4.65	5.075	5.425	5.675
May	4.15	4.30	4.65	5.075	5.425	5.675
June	4.15	4.30	4.65	5.075	5.425	5.675
July	4.29	4.56	4.65	5.425	5.425	5.675
Aug.	4.30	4.65	4.905	5.425	5.675	5.675
Sept.	4.30	4.65	5.075	5.425	5.675	5.675
Oct.	4.30	4.65	5.075	5.425	5.675	5.675
Nov.	4.30	4.65	5.075	5.425	5.675	5.675
Dec.	4.30	4.65	5.075	5.425	5.675	5.675
Average	4.22	4.46	4.813	5.220	5.529	5.675

CAST IRON WATER PIPE

At New York, Net Ton, 6-in. and Larger

	1948	1949	1950	1951	1952	1953
Jan.	$89.18	$105.95	$94.95	$105.00	$109.00	$114.00
Feb.	89.18	105.95	92.36	109.00	109.00	114.00
Mar.	89.18	105.95	91.50	109.00	109.00	114.00
Apr.	89.18	103.98	91.50	109.00	109.00	114.00
May	92.34	94.95	91.50	109.00	109.00	114.00
June	95.50	94.95	91.50	109.00	109.00	114.00
July	95.50	94.95	91.50	109.00	109.00	115.50
Aug.	103.86	94.95	91.50	109.00	109.00	115.50
Sept.	105.95	94.95	91.50	109.00	111.50	115.50
Oct.	105.95	94.95	95.00	109.00	114.00	115.50
Nov.	105.95	94.95	95.00	109.00	114.00	115.50
Dec.	105.95	94.94	98.00	109.00	114.00	115.50
Average	97.31	98.45	92.98	108.67	110.46	114.75

	1954	1955	1956†	1957†	1958†	1959†
Jan.	$115.50	$118.90	$121.50	$131.40	$138.70	$138.70
Feb.	115.50	118.90	121.50	131.70	138.70	138.50
Mar.	115.50	118.90	121.50	131.70	138.70	138.50
Apr.	115.50	118.90	123.50	131.70	138.70	138.50
May	115.50	116.50	123.70	131.70	138.70	138.50
June	115.50	116.50	125.60	131.70	138.70	138.50
July	115.50	116.50	125.60	131.70	138.70	138.50
Aug.	115.50	116.50	131.40	131.70	138.70	138.50
Sept.	115.50	121.50	131.40	138.50	138.70	138.50
Oct.	115.50	121.50	131.40	138.50	138.50	138.50
Nov.	115.50	121.50	131.40	138.70	138.70	138.50
Dec.	115.50	121.50	131.40	138.70	138.70	138.50
Average	115.50	118.96	126.66	133.94	138.70	138.51

† U. S. Pipe and Foundry Index used.

BUTTWELD STEEL PIPE

At Pittsburgh, Per Net Ton, Carload Lots

	1948	1949	1950	1951	1952	1953
Jan.	$88.00	$103.00	$108.00	$117.00	$117.00	$124.00
Feb.	91.50	103.00	108.00	117.00	117.00	124.00
Mar.	95.00	103.00	108.00	117.00	117.00	124.00
Apr.	95.00	103.00	108.00	117.00	117.00	124.00
May	94.00	103.00	108.00	117.00	117.00	125.88
June	93.00	103.00	108.00	117.00	117.00	132.75
July	95.00	103.00	108.00	117.00	118.75	136.50
Aug.	103.00	103.00	108.00	117.00	124.00	136.50
Sept.	103.00	103.00	108.00	117.00	124.00	136.50
Oct.	103.00	103.60	108.00	117.00	124.00	136.50
Nov.	103.00	103.00	108.00	117.00	124.00	136.50
Dec.	103.00	105.00	117.00	117.00	124.00	136.50
Average	97.21	103.17	108.75	117.00	120.06	131.14

	1954	1955	1956	1957	1958	1959
Jan.	$136.50	$141.50	$152.00	$164.00	$176.50	$182.50
Feb.	136.50	141.50	152.00	166.25	176.50	182.50
Mar.	136.50	141.50	152.00	168.50	176.50	182.50
Apr.	136.50	141.50	152.00	168.50	176.50	182.50
May	136.50	141.50	152.00	168.50	176.50	182.50
June	136.50	141.50	152.00	168.50	176.50	182.50
July	141.18	151.75	152.00	176.50	176.50	182.50
Aug.	141.50	154.00	159.20	176.50	182.50	182.50
Sept.	141.50	154.00	164.00	176.50	182.50	182.50
Oct.	141.50	154.00	164.00	176.50	182.50	182.50
Nov.	141.50	154.00	164.00	176.50	182.50	182.50
Dec.	141.50	154.00	164.00	176.50	182.50	182.50
Average	138.97	147.56	156.60	171.94	179.00	182.50

Computed from list discounts; 1-in. size std., T&C.

MANUFACTURER'S BRIGHT WIRE

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	3.55	4.33	4.50	4.85	4.85	5.225
Feb.	3.55	4.33	4.50	4.85	4.85	5.225
Mar.	3.55	4.22	4.50	4.85	4.85	5.225
Apr.	3.55	4.15	4.50	4.85	4.85	5.225
May	3.60	4.15	4.50	4.85	4.85	5.225
June	3.60	4.15	4.50	4.85	4.85	5.352
July	3.77	4.15	4.50	4.85	4.925	5.525
Aug.	4.33	4.15	4.50	4.85	5.225	5.525
Sept.	4.33	4.15	4.50	4.85	5.225	5.525
Oct.	4.33	4.15	4.50	4.85	5.225	5.525
Nov.	4.33	4.15	4.50	4.85	5.225	5.525
Dec.	4.33	4.29	4.85	4.85	5.225	5.525
Average	3.90	4.20	4.53	4.85	5.012	5.386

	1954	1955	1956	1957	1958	1959
Jan.	5.525	5.75	6.25	7.20	7.650	8.000
Feb.	5.525	5.75	6.60	7.20	7.650	8.000
Mar.	5.525	5.75	6.60	7.20	7.650	8.000
Apr.	5.525	5.75	6.60	7.20	7.650	8.000
May	5.525	5.75	6.60	7.20	7.650	8.000
June	5.525	5.75	6.60	7.20	7.650	8.000
July	5.735	6.125	6.60	7.65	7.650	8.000
Aug.	5.75	6.25	6.96	7.65	8.000	8.000
Sept.	5.75	6.25	7.20	7.65	8.000	8.000
Oct.	5.75	6.25	7.20	7.65	8.000	8.000
Nov.	5.75	6.25	7.20	7.65	8.000	8.000
Dec.	5.75	6.25	7.20	7.65	8.000	8.000
Average	5.636	5.989	6.80	7.43	7.796	8.000

STRUCTURAL STEEL SHAPES

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	2.80	3.25	3.40	3.65	3.65	3.85
Feb.	2.80	3.25	3.40	3.65	3.65	3.85
Mar.	2.80	3.25	3.40	3.65	3.65	3.85
Apr.	2.80	3.25	3.40	3.65	3.65	3.85
May	2.75	3.25	3.40	3.65	3.65	3.85
June	2.75	3.25	3.40	3.65	3.65	3.96
July	2.85	3.25	3.40	3.65	3.69	4.10
Aug.	3.25	3.25	3.40	3.65	3.85	4.10
Sept.	3.25	3.25	3.40	3.65	3.65	4.10
Oct.	3.25	3.25	3.40	3.65	3.85	4.10
Nov.	3.25	3.25	3.40	3.65	3.85	4.10
Dec.	3.25	3.31	3.65	3.65	3.85	4.10
Average	3.00	3.26	3.42	3.65	3.74	3.98

	1954	1955	1956	1957	1958	1959
Jan.	4.10	4.25	4.60	5.00	5.275	5.500
Feb.	4.10	4.25	4.60	5.00	5.275	5.500
Mar.	4.10	4.25	4.60	5.00	5.275	5.500
Apr.	4.10	4.25	4.60	5.00	5.275	5.500
May	4.10	4.25	4.60	5.00	5.275	5.500
June	4.10	4.25	4.60	5.00	5.275	5.500
July	4.24	4.51	4.60	5.275	5.275	5.500
Aug.	4.25	4.60	4.84	5.275	5.500	5.500
Sept.	4.25	4.60	5.00	5.275	5.500	5.500
Oct.	4.25	4.60	5.00	5.275	5.500	5.500
Nov.	4.25	4.60	5.00	5.275	5.500	5.500
Dec.	4.25	4.60	5.00	5.275	5.500	5.500
Average	4.17	4.41	4.75	5.178	5.369	5.500

COLD-FINISHED STEEL BARS

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953
Jan.	3.55	3.98	4.145	4.55	4.55	4.925
Feb.	3.55	3.98	4.145	4.55	4.55	4.925
Mar.	3.55	3.98	4.145	4.55	4.55	4.925
Apr.	3.55	3.98	4.145	4.55	4.55	4.925
May	3.50	3.98	4.145	4.55	4.55	4.925
June	3.50	3.98	4.145	4.55	4.55	5.041
July	3.82	3.98	4.145	4.55	4.625	5.20
Aug.	3.98	3.98	4.145	4.55	4.925	5.20
Sept.	3.98	3.98	4.145	4.55	4.925	5.20
Oct.	3.98	3.98	4.148	4.55	4.925	5.20
Nov.	3.98	3.98	4.15	4.55	4.925	5.20
Dec.	3.98	4.01	4.55	4.55	4.925	5.20
Average	3.74	3.98	4.179	4.55	4.712	5.072

	1954	1955	1956	1957	1958	1959
Jan.	5.20	5.40	5.90	6.85	7.300	7.650
Feb.	5.20	5.40	6.25	6.85	7.300	7.650
Mar.	5.20	5.40	6.25	6.85	7.300	7.650
Apr.	5.20	5.40	6.25	6.85	7.300	7.650
May	5.20	5.40	6.25	6.85	7.300	7.650
June	5.20	5.40	6.25	6.85	7.300	7.650
July	5.39	5.77	6.25	7.30	7.300	7.650
Aug.	5.40	5.90	6.61	7.30	7.650	7.650
Sept.	5.40	5.90	6.85	7.30	7.650	7.650
Oct.	5.40	5.90	6.85	7.30	7.650	7.650
Nov.	5.40	5.90	6.85	7.30	7.650	7.650
Dec.	5.40	5.90	6.85	7.30	7.650	7.650
Average	5.30	5.63	6.48	7.08	7.446	7.650

STEEL RAILS AT PITTSBURGH. No. 1 OH

Including Prices by Months and Yearly Averages in Dollars Per 100 lb*

	1946	1947	1948	1949	1950	1951	1952
Jan.	$43.00	$2.50	$2.75	$3.20	$3.40	$3.60	$3.60
Feb.	43.19*	2.50	2.75	3.20	3.40	3.60	3.60
Mar.	43.39	2.50	2.75	3.20	3.40	3.60	3.60
Apr.	43.39	2.50	2.75	3.20	3.40	3.60	3.60
May	43.39	2.50	2.70	3.20	3.40	3.60	3.60
June	43.39	2.50	2.70	3.20	3.40	3.60	3.60
July	43.39	2.50	2.80	3.20	3.40	3.60	3.635
Aug.	43.39	2.75	3.20	3.20	3.40	3.60	3.775
Sept.	43.39	2.75	3.20	3.20	3.40	3.60	3.775
Oct.	43.39	2.75	3.20	3.20	3.40	3.60	3.775
Nov.	43.39	2.75	3.20	3.20	3.40	3.60	3.775
Dec.	47.36	2.75	3.20	3.28	3.60	3.60	3.775
Average	43.67	2.60	2.93	3.21	3.42	3.60	3.676

	1953	1954	1955	1956	1957	1958	1959
Jan.	$3.775	$4.325	$4.445	$4.725	$5.075	$5.525	$5.750
Feb.	3.775	4.325	4.445	4.725	5.075	5.525	5.750
Mar.	3.775	4.325	4.445	4.725	5.275	5.525	5.750
Apr.	3.775	4.325	4.445	4.725	5.275	5.525	5.750
May	3.991	4.325	4.445	4.725	5.275	5.525	5.750
June	4.181	4.325	4.445	4.725	5.275	5.525	5.750
July	4.325	4.442	4.665	4.725	5.525	5.525	5.750
Aug.	4.325	4.445	4.725	5.135	5.525	5.525	5.750
Sept.	4.325	4.445	4.725	5.075	5.525	5.750	5.750
Oct.	4.325	4.445	4.725	5.075	5.525	5.750	5.750
Nov.	4.325	4.445	4.725	5.075	5.525	5.750	5.750
Dec.	4.325	4.445	4.725	5.075	5.525	5.750	5.750
Average	4.102	4.387	4.579	4.876	5.242	5.60	5.750

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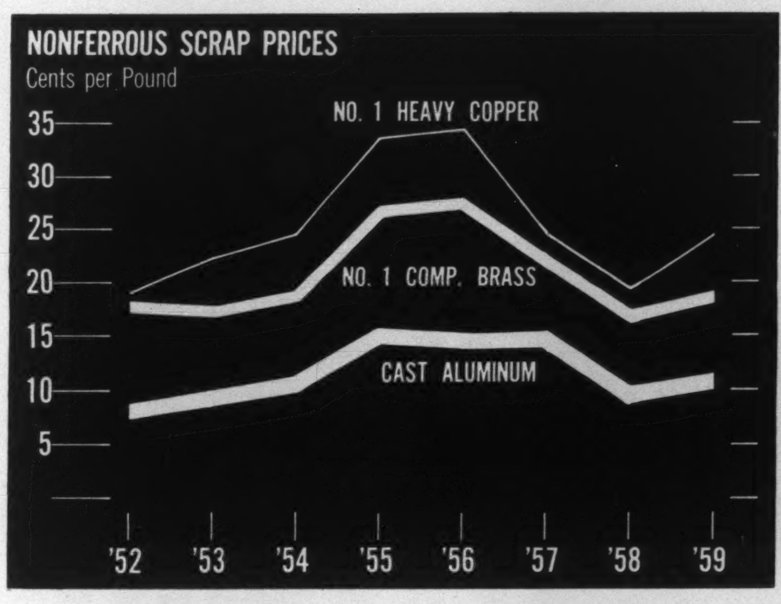
* Prices quoted dollars per gross ton prior to Feb. 15, 1946. Net ton, Feb. 15 to Dec. 13, 1946.

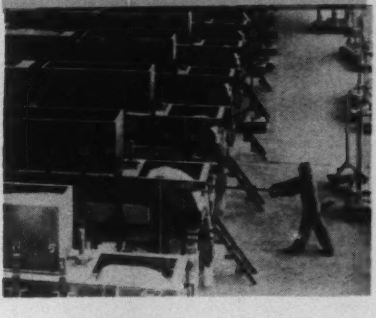
STAINLESS STEEL SHEETS

No. 304, Cents Per Pound

	1953	1954	1955	1956	1957	1958	1959
Jan.	45.28	48.75	44.50	47.25	53.25	55.00	55.00
Feb.	45.28	48.75	44.50	47.25	53.25	55.00	55.00
Mar.	45.59	48.75	44.50	47.25	53.25	55.00	55.00
Apr.	46.50	48.75	44.50	47.25	53.25	55.00	55.00
May	46.50	45.63	44.50	47.25	53.25	55.00	55.00
June	47.45	43.75	44.50	47.25	53.25	55.00	55.00
July	48.75	43.75	46.56	47.25	55.50	55.00	55.00
Aug.	48.75	43.75	47.25	47.25	55.50	55.00	55.00
Sept.	48.75	43.75	47.25	49.05	55.50	55.00	55.00
Oct.	48.75	43.75	47.25	50.25	55.50	55.00	55.00
Nov.	48.75	43.75	47.25	50.25	55.50	55.00	55.00
Dec.	48.75	44.26	47.25	50.25	55.50	55.00	55.00
Average	47.43	45.62	45.81	48.15	54.38	55.00	55.00

Nonferrous Metals and Scrap





ALUMINUM SCRAP, CAST

Cents Per Pound, f.o.b. New York*

	1954	1955	1956	1957	1958	1959
Jan.	8.88	11.50	17.25	11.12	10.38	10.00
Feb.	8.50	12.94	17.25	10.37	10.25	9.75
Mar.	8.85	14.75	17.25	10.25	10.25	9.75
Apr.	10.25	14.63	16.88	10.62	9.88	9.75
May	11.00	12.85	14.05	10.75	9.75	9.75
June	10.00	12.00	11.50	10.75	9.25	10.38
July	10.00	14.38	12.50	10.75	9.25	11.20
Aug.	10.00	16.50	13.00	11.15	9.31	11.50
Sept.	10.75	17.10	13.50	11.25	9.50	11.50
Oct.	11.00	17.13	13.00	11.15	9.50	11.50
Nov.	11.00	17.13	11.75	10.87	9.88	11.50
Dec.	11.00	17.13	12.25	10.75	9.75	11.75
Average	10.10	14.84	14.18	10.82	9.75	10.69

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* Dealers' Buying Price.

BRASS INGOTS, 85-5-5-5

No. 115, Cents Per Pound, Cars*

	1954	1955	1956	1957	1958	1959
Jan.	24.50	30.38	42.00	34.75	26.38	28.00
Feb.	23.75	32.81	42.00	32.25	25.75	28.50
Mar.	23.50	33.80	44.00	31.50	24.88	30.81
Apr.	25.75	37.00	43.50	31.50	25.00	31.25
May	26.50	35.30	40.60	31.10	25.25	30.25
June	27.00	34.50	36.25	30.25	26.31	30.25
July	27.00	36.50	35.50	29.50	27.00	29.65
Aug.	27.45	39.19	37.75	29.35	27.00	29.25
Sept.	28.13	42.50	37.75	27.62	27.00	30.38
Oct.	29.19	41.75	37.06	27.35	28.40	29.25
Nov.	29.50	41.75	35.00	26.75	28.00	30.38
Dec.	30.00	42.00	35.00	26.75	27.75	30.75
Average	26.86	37.29	39.70	29.99	26.56	29.89

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* Delivered.

CADMIUM PRICES, STICKS, BARS

Dollars Per Pound, 1 to 5-Ton Lots

June 15, 1950 to September 10, 1950	2.15
September 11, 1950 to November 30, 1950	2.40
December 2, 1950 to May 26, 1952	2.55
May 27, 1952 to August 5, 1952	2.25
August 6, 1952 to November 30, 1952	2.00
December 1, 1952 to December 13, 1952	1.50-2.00
December 13, 1952 to January 24, 1953	1.75-2.00
January 26, 1953 to January 31, 1954	2.00
February 1, 1954 to December 25, 1957	1.70
December 26, 1957 to September 30, 1958	1.55
October 1, 1958 to April 5, 1959	1.45
April 6, 1959 to October 7, 1959	1.30
October 8, 1959 to December 31, 1959	1.40

BRASS SCRAP, No. 1 COMP

Cents Per Pound, f.o.b. New York*

	1954	1955	1956	1957	1958	1959
Jan.	16.44	21.31	31.50	24.12	15.25	17.00
Feb.	15.75	23.19	31.50	21.75	17.75	17.81
Mar.	17.00	24.10	33.60	20.75	14.38	19.69
Apr.	17.75	25.88	32.12	21.12	14.75	20.20
May	18.88	24.90	27.00	20.95	14.75	19.25
June	19.25	24.94	23.75	20.12	16.00	19.00
July	19.25	26.69	24.00	18.75	15.95	17.75
Aug.	19.25	28.81	25.50	18.60	19.94	17.88
Sept.	19.44	30.25	26.00	16.69	15.75	18.56
Oct.	20.03	29.31	25.75	16.15	17.15	18.85
Nov.	20.70	30.30	23.75	16.00	17.50	19.50
Dec.	21.00	31.75	24.00	15.75	17.75	18.75
Average	18.73	26.79	27.37	19.23	16.41	18.69

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* Dealers' Buying Price.

INGOT BRASS AND BRONZE

Short Tons of Shipments, Monthly

	1955	1956	1957	1958	1959
Jan.	25,201	27,736	25,681	20,468	22,046
Feb.	25,349	24,949	20,769	17,413	23,746
Mar.	29,713	28,310	21,948	18,825	26,109
Apr.	27,641	25,808	23,507	18,009	26,115
May	23,708	23,437	22,037	17,191	23,967
June	23,141	18,842	18,888	17,962	22,922
July	18,513	17,364	16,695	16,658	20,346
Aug.	27,013	23,812	19,654	17,882	21,741
Sept.	26,349	20,929	19,670	20,540	22,685
Oct.	25,228	23,045	22,800	23,225	23,067
Nov.	25,102	21,818	19,767	20,758	21,100*
Dec.	21,448	18,046	16,875	18,676	20,130*
Total	298,406	274,096	248,291	227,607	273,974*

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* Estimate. Source: Brass & Bronze Ingot Institute.

COBALT, 97 TO 99 PCT.

Per Pound, 100 lb Lots Since 1947

April 1, 1949 to December 31, 1950	$1.80
January 2, 1951 to October 1, 1951	2.10
October 1, 1951 to October 31, 1953	2.40
November 2, 1953 to December 5, 1956	$2.60 to 2.67
December 6, 1956 to February 13, 1957	2.35 to 2.42
February 14, 1957 to February 11, 1959	2.00 to 2.07
February 12, 1959 to December 31, 1959	1.75 to 1.82

A weekly column on the nonferrous market as well as complete nonferrous and metal powder prices are a regular Iron Age feature.

No. 1 HEAVY COPPER SCRAP

Cents Per Pound, f.o.b. New York*

	1954	1955	1956	1957	1958	1959
Jan.	22.63	27.00	41.00	26.63	17.81	22.50
Feb.	22.63	29.19	40.50	23.75	17.25	23.94
Mar.	23.50	30.15	43.40	23.75	16.94	25.94
Apr.	24.00	31.44	40.75	24.09	17.75	25.40
May	24.63	31.06	35.30	23.60	17.85	25.38
June	24.75	33.00	31.25	22.75	19.81	25.06
July	24.75	33.75	30.13	21.25	20.05	23.15
Aug.	24.75	35.63	32.13	20.85	19.96	23.50
Sept.	24.94	38.65	31.38	18.28	19.56	24.69
Oct.	25.63	36.69	29.25	18.95	21.80	24.35
Nov.	25.75	38.25	27.65	19.00	23.66	26.38
Dec.	26.63	41.00	27.75	19.00	23.80	25.25
Average	24.56	33.82	34.21	21.82	19.69	24.83

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* Dealers' Buying Price.

BRONZE INGOTS, 88-10-2

No. 245, Cents Per Pound, Cars*

	1954	1955	1956	1957	1958	1959
Jan.	29.50	35.13	48.75	39.50	29.88	32.25
Feb.	28.75	37.56	48.75	36.62	29.25	33.00
Mar.	28.50	38.95	50.75	35.50	28.38	36.75
Apr.	31.94	42.25	50.25	35.50	28.50	36.00
May	32.75	40.55	46.80	35.10	28.75	35.00
June	33.25	39.75	42.25	34.22	30.00	35.00
July	33.25	41.75	41.50	33.50	30.75	34.10
Aug.	33.40	45.50	43.50	33.35	30.75	33.50
Sept.	33.69	48.75	43.50	31.25	30.75	34.63
Oct.	34.50	48.00	42.63	30.85	32.15	33.50
Nov.	34.75	48.00	40.00	30.25	32.25	36.88
Dec.	34.75	48.75	40.00	30.25	32.25	36.00
Average	32.42	42.91	44.89	30.82	30.30	34.72

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* Delivered.

REMELT ALUMINUM INGOT

No. 12, Cents Per Pound, Cars*

	1954	1955	1956	1957	1958	1959
Jan.	19.38	23.44	32.00	23.31	22.19	21.75
Feb.	18.66	25.98	30.63	22.62	21.50	21.75
Mar.	19.18	29.65	30.10	22.81	21.38	21.75
Apr.	20.75	29.38	30.25	22.69	21.34	21.75
May	20.38	26.70	27.00	21.70	21.36	21.75
June	19.50	26.00	24.63	21.31	21.38	21.75
July	19.50	26.69	25.19	22.09	21.38	23.35
Aug.	19.78	29.69	27.44	23.00	21.75	23.75
Sept.	20.19	30.35	27.25	22.69	21.75	23.75
Oct.	20.81	30.75	25.75	22.55	21.75	23.75
Nov.	20.88	31.00	24.07	22.50	21.75	23.75
Dec.	21.13	31.25	24.25	22.50	22.00	24.00
Average	20.00	28.41	27.38	22.48	21.63	22.74

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* Delivered.

NONFERROUS

Prices: Straits tin, electrolytic copper, nickel, aluminum, antimony and U.S. primary aluminum production.

STRAITS TIN, PROMPT PRICE

Cents Per Pound, at New York

	1948	1949	1950	1951	1952	1953
Jan.	94.00	$1.03	75.75	$1.72	$1.097	$1.215
Feb.	94.00	$1.03	74.50	$1.83	$1.215	$1.215
Mar.	94.00	$1.03	75.62	$1.45	$1.215	$1.214
Apr.	94.00	$1.03	76.38	$1.46	$1.215	$1.011
May	94.00	$1.03	77.50	$1.40	$1.215	97.50
June	$1.03	$1.03	77.70	$1.18	$1.215	92.92
July	$1.03	$1.03	89.88	$1.06	$1.215	81.90
Aug.	$1.03	$1.03	$1.02	$1.03	$1.212	80.71
Sept.	$1.03	$1.02	$1.01	$1.03	$1.213	82.36
Oct.	$1.03	95.49	$1.13	$1.03	$1.212	80.86
Nov.	$1.03	90.11	$1.38	$1.03	$1.213	83.11
Dec.	$1.03	79.06	$1.45	$1.03	$1.215	84.61
Average	99.25	99.22	95.53	$1.27	$1.204	95.79

	1954	1955	1956	1957	1958	1959
Jan.	84.83	87.28	104.82	101.53	92.94	99.41
Feb.	85.04	90.78	100.78	101.06	93.90	102.79
Mar.	91.88	91.04	100.67	99.70	94.42	103.03
Apr.	96.13	91.40	99.27	99.30	92.95	102.50
May	93.51	91.37	97.01	98.29	92.95	103.07
June	94.19	93.64	94.19	98.06	94.49	103.84
July	96.54	96.82	96.24	96.55	94.89	102.31
Aug.	93.39	96.46	99.08	94.26	94.99	102.33
Sept.	93.52	96.26	103.83	93.44	94.05	102.43
Oct.	93.05	96.09	106.87	91.89	96.46	102.21
Nov.	91.14	97.87	110.91	89.23	99.24	100.99
Dec.	88.57	107.76	108.00	92.38	98.99	99.40*
Average	91.82	94.73	$1.018	96.31	95.17	102.03*

* Estimate.

ANTIMONY, U. S. METAL

Cents Per Pound, F.O.B. Laredo, Tex.

	1954	1955	1956	1957	1958	1959
Jan.	28.50	28.50	33.50	33.50	33.50	29.50
Feb.	28.50	28.50	33.50	33.50	31.50	29.50
Mar.	28.50	28.50	33.50	33.50	29.50	29.50
Apr.	28.50	28.50	33.50	33.50	29.50	29.50
May	28.50	28.50	33.50	33.50	29.50	29.50
June	28.50	28.50	33.50	33.50	29.50	29.50
July	28.50	28.50	33.50	33.50	29.50	29.50
Aug.	28.50	29.75	33.50	33.50	29.50	29.50
Sept.	28.50	33.50	33.50	33.50	29.50	29.50
Oct.	28.50	33.50	33.50	33.50	29.50	29.50
Nov.	28.50	33.50	33.50	33.50	29.50	29.50
Dec.	28.50	33.50	33.50	33.50	29.50	29.50
Average	28.50	30.27	33.50	33.50	30.00	29.50

MAGNESIUM, 99.8 PCT INGOT

Cents Per Pound, at Freeport, Tex.

Year	Price	Year	Price	Year	Price
1933	28.00	1942	22.50	1951	24.50
1934	26.00	1943	20.50	1952	24.50
1935	30.00	1944	20.50	1953	26.94
1936	30.00	1945	20.50	1954	27.75
1937	30.00	1946	20.50	1955	30.44
1938	30.00	1947	20.50	1956	36.00
1939	27.00	1948	20.50	1957	36.00
1940	27.00	1949	20.50	1958	36.00
1941	27.00	1950	22.02	1959	36.00

ELECTROLYTIC COPPER

Cents Per Pound, Conn. Valley

	1948	1949	1950	1951	1952	1953
Jan.	21.50	23.50	18.50	24.50	24.50	24.50
Feb.	21.50	23.50	18.50	24.50	24.50	25.41
Mar.	21.50	23.49	18.50	24.50	24.50	30.58
Apr.	21.50	21.72	18.94	24.50	24.50	30.70
May	21.50	18.05	19.92	24.50	24.50	29.85
June	21.50	16.66	22.27	24.50	24.50	29.88
July	21.50	17.33	22.50	24.50	24.50	29.88
Aug.	23.43	17.63	22.54	24.50	24.50	29.39
Sept.	23.50	17.63	23.25	24.50	24.50	29.50
Oct.	23.50	17.63	24.50	24.50	24.50	29.61
Nov.	23.50	18.42	24.50	24.50	24.50	29.75
Dec.	23.50	18.50	24.50	24.50	24.50	29.75
Average	22.33	19.51	21.54	24.50	24.50	29.07

	1954	1955	1956	1957	1958	1959
Jan.	29.75	30.17	43.00	36.00	25.69	29.00
Feb.	29.75	33.00	44.026	33.14	25.00	29.94
Mar.	29.87	33.22	46.00	32.14	25.00	31.14
Apr.	29.97	36.00	46.00	32.00	25.00	31.50
May	30.00	36.00	46.00	32.00	25.00	31.50
June	30.00	36.00	46.00	30.90	25.26	31.50
July	30.00	36.00	41.68	29.25	26.02	30.52
Aug.	30.00	38.26	40.00	28.72	26.50	30.00
Sept.	30.00	43.00	40.00	27.00	26.50	30.57
Oct.	30.00	43.00	39.33	27.00	27.61	30.57
Nov.	30.00	43.00	36.00	27.00	29.00	32.50
Dec.	30.00	43.00	36.00	27.00	29.00	33.00*
Average	29.95	37.55	42.00	30.27	26.30	30.98*

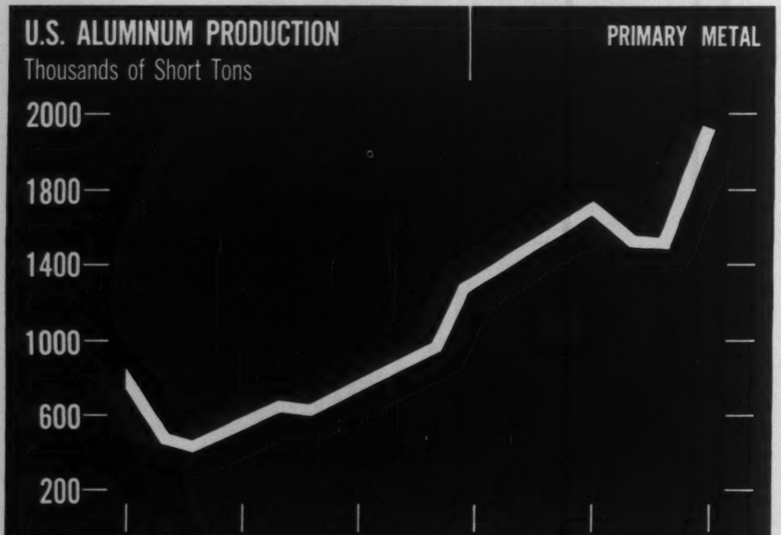
* Estimate.

U. S. PRODUCTION OF PRIMARY ALUMINUM (Short tons)

	1951	1952	1953	1954	1955	1956	1957	1958	1959
Jan.	67,954	76,934	89,895	116,247	128,203	140,394	147,029	139,910	156,701
Feb.	62,740	72,374	92,649	110,483	116,236	132,763	119,059	121,980	142,116
Mar.	70,022	77,069	104,920	122,338	130,272	145,895	135,706	134,019	157,189
Apr.	67,701	76,880	102,071	120,431	126,394	144,726	139,152	124,999	155,213
May	67,720	80,804	105,477	125,144	131,128	150,800	145,174	126,327	163,857
June	67,454	77,476	104,152	120,758	127,633	145,726	138,007	115,326	167,323
July	72,698	78,368	109,285	126,162	132,667	151,624	142,041	118,541	179,194
Aug.	73,816	85,175	110,545	125,296	133,551	92,406	143,448	125,416	172,817
Sept.	69,429	76,882	109,333	120,332	130,606	132,316	129,277	124,713	168,205
Oct.	72,647	77,312	108,219	125,089	134,656	149,125	133,759	137,419	173,762
Nov.	72,246	74,639	105,637	121,252	133,689	145,081	135,024	140,962	153,666
Dec.	72,454	83,409	110,291	127,035	140,748	148,391	140,036	152,301	154,957*
Total	836,881	937,321	1,252,015	1,458,500	1,565,783	1,678,954	1,647,712	1,565,556	1,945,000*

* Estimate.

Source: U. S. Bureau of Mines and Aluminum Association.



ELECTROLYTIC NICKEL

Cents Per Pound, New York, Duty Paid

Period	Price
July 22, 1948 to Feb. 15, 1949	42.90
Feb. 16, 1949 to Oct. 4, 1949	42.93
Oct. 5, 1949 to May 31, 1950	42.97
June 1, 1950 to Dec. 12, 1950	51.22
Dec. 13, 1950 to June 1, 1951	53.55
June 2, 1951 to Jan. 13, 1953	59.58
Jan. 14, 1953 to Nov. 23, 1954	63.08
(F. O. B., Port Colbourne, Canada)	
Nov. 24, 1954 to Dec. 5, 1956	64.50
Dec. 6, 1956 to Dec. 31, 1959	74.00

ALUMINUM 99 PCT INGOT

Cents Per Pound, Freight Allowed

	1948	1949	1950	1951	1952	1953
Jan.	15.00	17.00	17.00	19.00	19.00	20.23
Feb.	15.00	17.00	17.00	19.00	19.00	20.50
Mar.	15.00	17.00	17.00	19.00	19.00	20.50
Apr.	15.00	17.00	17.00	19.00	19.00	20.50
May	15.00	17.00	17.20	19.00	19.00	20.50
June	15.00	17.00	17.50	19.00	19.00	20.50
July	16.00	17.00	17.50	19.00	19.00	20.94
Aug.	16.00	17.00	17.50	19.00	20.00	21.50
Sept.	16.00	17.00	17.69	19.00	20.00	21.50
Oct.	16.70	17.00	19.00	19.00	20.00	21.50
Nov.	17.00	17.00	19.00	19.00	20.00	21.50
Dec.	17.00	17.00	19.00	19.00	20.00	21.50
Average	15.66	17.00	17.70	19.00	19.42	20.93

	1954	1955	1956	1957	1958	1959
Jan.	21.50	22.83	24.40	27.10	28.10	26.80
Feb.	21.50	23.20	24.40	27.10	28.10	26.80
Mar.	21.50	23.20	24.50	27.10	28.10	26.80
Apr.	21.50	23.20	25.90	27.10	26.10	26.80
May	21.50	23.20	25.90	27.10	26.10	26.80
June	21.50	23.20	25.90	27.10	26.10	26.80
July	21.50	23.20	25.90	27.10	26.10	26.80
Aug.	22.08	24.40	26.70	28.10	26.80	26.80
Sept.	22.20	24.40	27.10	28.10	26.80	26.80
Oct.	22.20	24.40	27.10	28.10	26.80	26.80
Nov.	22.20	24.40	27.10	28.10	26.80	26.80
Dec.	22.20	24.40	27.10	28.10	26.80	26.93
Average	21.78	23.67	26.00	27.52	26.64	26.81

Metal Powders

Prices: Lead, zinc . . . U. S. primary magnesium production . . . Metal powder prices including iron and copper.

IRON POWDER PRICES

Cents Per Pound, Averaged Monthly

	Sponge, 98+Pct Fe, Carload Lots, −100 Mesh	Electrolytic, Domestic, 99.5+Pct Fe, −100 Mesh
1953 Average	16.98	44.0
1954 Average	16.35	40.75
1955 Average	9.5	36.5
1956 Average	9.5	36.5
1957 Average	9.50	36.5
1958 Average	11.25	29.50 to 33.00
1959 Average	11.50	34.50

U. S. PRODUCTION OF PRIMARY MAGNESIUM

Short Tons

Month	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
January	833	988	1,002	1,876	7,425	9,908	6,446	5,089	6,337	7,391	5,272	1,877
February	830	884	913	1,709	7,794	9,078	5,856	4,646	5,908	6,617	3,526	1,725
March	887	988	948	1,885	8,893	10,352	6,545	4,942	6,347	7,383	3,235	1,925
April	801	958	957	2,043	8,800	9,751	6,203	1,859	6,081	7,222	2,772	1,808
May	797	987	972	2,194	9,093	9,116	6,460	4,277	6,359	7,227	2,469	2,668
June	766	950	1,175	2,512	8,670	7,286	6,190	4,757	6,098	6,718	1,784	2,778
July	792	985	1,132	2,998	9,529	6,207	6,049	5,112	1,136	6,598	1,799	2,850
August	809	970	1,400	3,418	9,771	6,265	5,771	5,880	2,314	6,958	1,845	2,967
September	819	974	1,635	4,166	8,422	6,076	5,325	5,923	6,128	6,296	1,791	2,846
October	873	941	1,690	5,147	8,990	6,341	5,149	6,296	6,735	6,276	1,927	3,018
November	814	969	1,760	6,043	9,123	6,227	4,942	6,130	6,818	5,823	1,814	3,100*
December	932	1,004	1,942	6,923	9,323	6,467	4,788	6,230	7,085	5,648	1,862	2,900*
Total	10,003	11,598	15,726	40,914	105,833	93,075	69,724	61,131	68,346	78,865	30,096	32,427*

Producers' reports to Bureau of Mines and Magnesium Assn.

* Estimate.

SHIPMENTS OF IRON AND IRON-BASE POWDER

Total Net Tons, Major Classes*

	Total	Bearings and Parts	Friction Materials	Electronics & Magnetic Applications	Miscellaneous	Welding Electrodes —Flame Cutting
1947	3,115	1,560	30	600	845	......
1948	3,520	1,685	25	990	820	......
1949	3,235	1,746	14	935	540	......
1950	3,942	1,570	23	1,611	738	......
1951	3,651	2,150	1.5	900	600	......
1952	4,048	2,109	1.0	336	1,602	......
1953	6,255	3,457	14.4	1,599	1,189	......
1954	7,835	3,445	75.0	905	3,410	......
1955	20,724	9,990	99.5	1,097.5	9,537	......
1956	22,195	8,900	144.5	1,071	12,030	......
1957	25,389	11,893	217.5	970	1,172	11,137
1958	21,479	9,944	141.0	1,425	966	9,003
1959†	34,140	18,612	180.0	1,596	1,320	12,432

* Domestic. † Estimates.

PRIME WESTERN ZINC PRICE

Cents Per Pound, at E. St. Louis

	1947	1948	1949	1950	1951	1952	1953
Jan.	11.005	11.69	18.18	9.48	18.22	20.29	13.43
Feb.	11.005	12.61	18.20	10.47	18.22	20.29	12.31
Mar.	11.005	12.61	17.76	10.66	18.22	20.29	11.86
Apr.	11.005	12.61	14.76	11.41	18.25	20.29	11.83
May	11.005	12.64	12.58	12.71	18.25	20.33	11.83
June	11.005	12.65	10.27	15.49	18.25	16.57	11.83
July	11.005	13.09	10.06	15.72	18.25	15.83	11.67
Aug.	11.005	15.65	10.70	15.72	18.26	14.88	11.53
Sept.	11.005	15.65	10.77	17.82	18.29	14.88	10.68
Oct.	11.03	15.74	10.04	18.22	20.22	14.08	10.50
Nov.	11.06	17.27	10.46	18.22	20.29	13.33	10.50
Dec.	11.06	18.15	10.47	18.22	20.29	13.33	10.50
Avg.	11.02	14.20	12.85	14.51	18.75	17.03	11.54

	1954	1955	1956	1957	1958	1959
Jan.	10.26	12.00	13.44	13.50	10.00	11.50
Feb.	9.88	12.00	13.50	13.50	10.00	11.42
Mar.	10.16	12.00	13.50	13.50	10.00	11.00
Apr.	10.75	12.43	13.50	13.50	10.00	11.00
May	10.79	12.50	13.50	11.93	10.00	11.00
June	11.46	12.75	13.50	10.84	10.00	11.00
July	11.50	13.00	13.50	10.00	10.00	11.00
Aug.	11.50	13.00	13.50	10.00	10.00	11.00
Sept.	11.98	13.40	13.50	10.00	10.00	11.33
Oct.	12.00	13.50	13.50	10.00	10.87	12.21
Nov.	12.00	13.50	13.50	10.00	11.42	12.50
Dec.	12.00	13.50	13.50	10.00	11.50	12.50
Average	11.19	12.79	13.49	11.39	10.32	11.46

LEAD PRICE, COMMON GRADE

Cents Per Pound, at St. Louis

	1947	1948	1949	1950	1951	1952	1953
Jan.	13.00	15.00	21.50	12.00	17.00	19.00	14.19
Feb.	13.25	15.00	21.50	12.00	17.00	19.00	13.50
Mar.	15.00	15.00	18.98	10.96	17.00	19.00	13.40
Apr.	15.00	17.21	15.15	10.63	17.00	18.91	12.64
May	15.00	17.50	13.72	11.72	17.00	15.73	12.74
June	15.00	17.50	12.00	11.81	17.00	15.08	13.41
July	15.00	17.80	13.56	11.66	17.00	16.00	13.68
Aug.	15.00	19.50	14.99	12.93	17.00	16.00	14.00
Sept.	15.00	19.50	15.05	15.80	17.00	16.00	13.74
Oct.	15.00	19.50	13.42	16.00	18.93	14.40	13.50
Nov.	15.00	21.50	12.52	17.00	19.00	14.18	13.50
Dec.	15.00	21.50	12.00	17.00	19.00	14.13	13.50
Average	14.69	18.04	15.37	13.29	17.49	16.45	13.48

	1954	1955	1956	1957	1958	1959
Jan.	13.26	15.00	15.96	15.80	12.80	12.42
Feb.	12.82	15.00	15.80	15.80	12.80	11.42
Mar.	12.94	15.00	15.80	15.80	12.80	11.30
Apr.	13.91	15.00	15.80	15.80	11.85	11.01
May	14.00	15.00	15.80	15.023	11.52	11.70
June	14.11	15.00	15.80	14.12	11.04	11.80
July	14.00	14.90	15.80	13.80	10.80	11.80
Aug.	14.06	14.80	15.80	13.80	10.65	12.09
Sept.	14.60	14.94	15.80	13.80	10.68	12.80
Oct.	14.98	15.30	15.80	13.51	12.47	12.80
Nov.	15.00	15.30	15.80	13.30	12.80	12.80
Dec.	15.00	15.30	15.80	12.80	12.80	12.54*
Average	14.06	15.05	15.81	14.45	11.92	12.02*

* Estimate.

COPPER POWDER PRICE

Cents per lb. F.O.B. Mill—100 Mesh

	Electrolytic	Hydrogen Reduced
1954 Average	43.50	43.50
1955 Average	53.37	53.37
1956 Average	60.50	60.50
1957 Average	45.67	49.75
1958 Average	41.25	48.8
1959 Average	48.25	43.25

IMPORTS OF IRON POWDER

Net Tons

1951	12,850
1952	5,627
1953	6,964
1954	9,835
1955	10,986
1956	10,125
1957	5,000
1958	557
1959	618*

* Estimated.

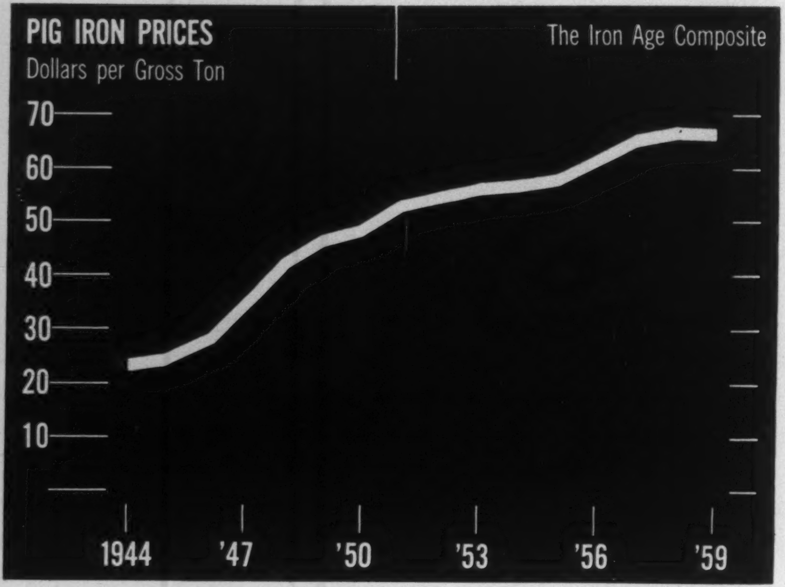
COPPER AND COPPER-BASE POWDER SHIPMENTS, FLAKE AND GRANULAR

Net Tons

1952	15,000
1953	17,000
1954	14,800
1955	21,500
1956	19,000
1957	17,900
1958	18,000
1959	24,500*

* Iron Age estimate.

Pig Iron and Iron Ore



COMPOSITE PIG IRON PRICE

Average of THE IRON AGE quotations on basic pig iron at Valley furnaces and foundry iron at Chicago, Birmingham, Buffalo, Valley and Philadelphia, in gross tons.

	1939	1940	1941*	1945*	1946	1947
Jan.	$20.61	$22.61	$23.45	$23.61	$25.37	$30.14
Feb.	20.61	22.61	23.45	23.86	25.37	30.15
Mar.	20.61	22.61	23.53	24.61	25.75	32.92
Apr.	20.61	22.61	23.61	24.61	26.12	33.15
May	20.61	22.61	23.61	24.61	26.45	33.15
June	20.61	22.61	23.61	24.61	28.13	33.15
July	20.61	22.61	23.61	24.61	28.13	34.52
Aug.	20.61	22.61	23.61	24.61	28.13	36.84
Sept.	21.61	22.61	23.61	24.61	28.13	36.95
Oct.	22.61	22.61	23.61	24.80	28.13	36.95
Nov.	22.61	22.61	23.61	25.37	28.13	37.04
Dec.	22.61	22.95	23.61	25.37	29.64	37.06
Average	21.19	22.64	23.58	24.61	27.29	34.34

	1948	1949	1950	1951	1952	1953
Jan.	$39.83	$46.79	$45.98	$52.69	$52.72	$55.26
Feb.	40.27	46.74	46.38	52.69	52.72	55.26
Mar.	40.32	46.74	46.38	52.69	52.72	55.26
Apr.	40.11	46.64	46.38	52.69	52.72	55.26
May	40.33	45.97	46.38	52.69	52.77	55.26
June	40.51	45.91	46.38	52.69	52.77	55.32
July	42.25	45.91	46.38	52.69	53.27	56.73
Aug.	44.34	45.91	46.56	52.69	55.26	56.76
Sept.	44.96	45.90	47.16	52.69	55.26	56.66
Oct.	46.63	45.88	49.29	52.72	55.26	56.59
Nov.	46.82	45.88	49.69	52.72	55.26	56.59
Dec.	46.82	45.88	52.50	52.72	55.26	56.59
Average	42.76	46.18	47.85	52.70	53.82	55.96

	1954	1955	1956	1957	1958	1959
Jan.	$56.59	$56.59	$59.09	$62.90	$66.42	$66.41
Feb.	56.59	56.59	59.09	62.90	66.45	66.41
Mar.	56.59	56.59	59.25	64.56	66.49	66.41
Apr.	56.59	56.59	60.29	64.56	66.49	66.41
May	56.59	56.59	60.29	64.56	66.49	66.41
June	56.59	56.59	60.29	64.56	66.49	66.41
July	56.59	58.46	60.33	65.37	66.49	66.41
Aug.	56.59	59.09	63.02	66.40	66.49	66.41
Sept.	56.59	59.09	63.04	66.42	66.41	66.41
Oct.	56.59	59.09	63.04	66.42	66.41	66.41
Nov.	56.59	59.09	63.04	66.42	66.41	66.41
Dec.	56.59	59.09	63.04	66.42	66.41	66.41
Average	56.59	57.78	61.15	65.15	66.45	66.41

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* Price unchanged at $23.61 from 1942 through 1944.

PRODUCTION OF PIG IRON AND FERROALLOYS, Net Tons

	PIG IRON							FERROALLOYS*			
Year	Basic	Bessemer	Low Phosphorus	Foundry	Malleable	All Other, Including Direct Castings	Total Pig Iron	Ferromang. and Spiegeleisen	Ferrosilicon and Silvery Pig Iron	All Other Ferroalloys	Total Ferroalloys
1959	....	....	....	....	....	....	60,400,000†	....	....	....	1,800,000†
1958	49,114,646	3,599,873	320,278	1,606,028	2,304,904	211,978	57,157,707	678,395	448,296	523,896	1,650,587
1957	65,377,744	6,344,106	580,013	2,279,256	3,459,331	334,928	78,375,378	1,040,590	721,139	666,178	2,422,907
1956	61,638,748	6,664,957	504,189	2,398,346	3,467,117	395,132	75,068,489	968,006	809,285	729,678	2,506,969
1955	62,484,889	7,436,354	263,036	2,754,641	3,531,420	387,077	76,857,417	955,174	803,281	647,993	2,406,448
1954	47,023,175	5,652,503	211,893	2,273,032	2,629,662	202,283	57,965,548	749,314	636,694	454,587	1,840,694
1953	59,882,512	8,110,881	297,065	2,500,996	3,784,458	325,517	74,901,429	1,007,248	772,339	569,152	2,348,739
1952	47,511,189	7,445,715	307,478	2,670,210	3,120,168	258,178	61,312,938	820,808	749,059	471,150	2,041,017
1951	54,212,509	9,045,954	314,725	3,050,626	3,363,369	287,095	70,274,278	865,805	919,085	389,375	2,174,265
1950	49,880,440	8,090,608	335,418	2,806,247	3,181,043	293,151	64,586,907	776,881	839,667	196,856	1,813,404
1949	40,905,356	7,059,416	301,520	2,503,912	2,409,436	232,922	53,412,562	675,029	667,322	161,872	1,504,223
1948	46,315,064	7,731,530	384,425	2,769,510	2,590,656	264,031	60,055,216	805,013	842,385	208,945	1,856,343
1947	44,804,743	7,182,207	331,118	2,953,405	2,874,752	182,687	58,328,912	800,725	802,976	184,706	1,788,407
1946	33,727,655	5,932,414	167,013	2,545,936	2,190,285	215,493	44,778,796	540,061	724,141	156,828	1,421,030
1945	39,866,982	8,255,513	314,063	2,248,887	2,350,076	187,648	53,223,169	706,078	817,849	171,933	1,695,860

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* Including ferroalloys produced in electric furnaces.

† Iron Age estimate.

Source: American Iron and Steel Institute.

CANADIAN BLAST FURNACE PRODUCTION, Net Tons Including Ferroalloys

Year	Pig Iron	Ferroalloys	Total
1936	759,618	87,679	847,297
1937	1,006,717	91,931	1,098,648
1938	789,710	59,720	849,430
1939	846,418	85,531	931,949
1940	1,309,161	151,661	1,460,822
1941	1,528,054	213,218	1,741,272
1942	1,975,015	213,636	2,188,651
1943	1,758,269	197,094	1,955,363
1944	1,852,628	171,323	2,023,951
1945	1,777,958	186,978	1,964,936
1946	1,403,758	116,995	1,520,753
1947	1,969,847	149,832	2,119,679
1948	2,120,909	250,659	2,371,568
1949	2,154,352	211,603	2,365,955
1950	2,309,732	181,575	2,491,307
1951	2,552,696	250,930	2,803,626
1952	2,682,065	232,036	2,914,101
1953	3,012,269	150,595	3,162,864
1954	2,213,433	109,833	2,323,266
1955	3,213,764	166,682	3,380,440
1956	3,568,196	242,164	3,810,366
1957	3,718,155	230,031	3,948,186
1958	3,060,962	110,754	3,171,716
1959*	4,168,000	125,000	4,293,000

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* Estimated.

Source: Dominion Bureau of Statistics.

Prices: Foundry iron at Buffalo, Chicago, Granite City and Birmingham . . . Basic iron Valley . . . Valley malleable.

CHICAGO FOUNDRY PIG IRON

Per Gross Ton, at Furnace

	1948	1949	1950	1951	1952	1953
Jan.	$38.75	$46.50	$46.50	$52.50	$52.50	$55.00
Feb.	39.00	46.50	46.50	52.50	52.50	55.00
Mar.	39.00	46.50	46.50	52.50	52.50	55.00
Apr.	39.00	46.50	46.50	52.50	52.50	55.00
May	39.00	46.50	46.50	52.50	52.50	55.00
June	39.00	46.50	46.50	52.50	52.50	55.00
July	42.00	46.50	46.50	52.50	53.00	56.50
Aug.	39.00	46.50	46.50	52.50	55.00	56.50
Sept.	43.00	46.50	47.50	52.50	55.00	56.50
Oct.	46.50	46.50	49.50	52.50	55.00	56.50
Nov.	46.50	46.50	49.50	52.50	55.00	56.50
Dec.	46.50	46.50	52.50	52.50	55.00	56.50
Average	41.77	46.50	47.58	52.50	53.75	55.75

	1954	1955	1956	1957	1958	1959
Jan.	$56.50	$56.50	$59.00	$63.00	$66.50	$66.50
Feb.	56.50	56.50	59.00	63.00	66.50	66.50
Mar.	56.50	56.50	59.00	65.00	66.50	66.50
Apr.	56.50	56.50	60.50	65.00	66.50	66.50
May	56.50	56.50	60.50	65.00	66.50	66.50
June	56.50	56.50	60.50	65.00	66.50	66.50
July	56.50	58.37	60.50	66.50	66.50	66.50
Aug.	56.50	59.00	61.13	66.50	66.50	66.50
Sept.	56.50	59.00	63.00	66.50	66.50	66.50
Oct.	56.50	59.00	63.00	66.50	66.50	66.50
Nov.	56.50	59.00	63.00	66.50	66.50	66.50
Dec.	56.50	59.00	63.00	66.50	66.50	66.50
Average	56.50	57.69	61.01	65.42	66.50	66.50

BUFFALO FOUNDRY PIG IRON

Per Gross Ton, at Furnace

	1948	1949	1950	1951	1952	1953
Jan.	$40.37	$47.28	$46.50	$52.50	$52.50	$55.00
Feb.	42.12	47.00	46.50	52.50	52.50	55.00
Mar.	42.45	47.00	46.50	52.50	52.50	55.00
Apr.	41.49	46.75	46.50	52.50	52.50	55.00
May	41.37	46.50	46.50	52.50	52.50	55.00
June	41.44	46.50	46.50	52.50	52.50	55.00
July	42.08	46.50	46.50	52.50	53.00	56.50
Aug.	44.90	46.50	46.50	52.50	55.00	56.50
Sept.	45.87	46.50	47.25	52.50	55.00	56.50
Oct.	47.12	46.50	49.50	52.50	55.00	56.50
Nov.	47.50	46.50	49.50	52.50	55.00	56.50
Dec.	47.50	46.50	52.50	52.50	55.00	56.50
Average	43.65	46.67	47.56	52.50	53.75	55.75

	1954	1955	1956	1957	1958	1959
Jan.	$56.50	$56.50	$59.00	$63.00	$66.50	$66.50
Feb.	56.50	56.50	59.00	63.00	66.50	66.50
Mar.	56.50	56.50	59.00	65.00	66.50	66.50
Apr.	56.50	56.50	60.50	65.00	66.50	66.50
May	56.50	56.50	60.50	65.00	66.50	66.50
June	56.50	56.50	60.50	65.00	66.50	66.50
July	56.50	58.37	60.50	66.50	66.50	66.50
Aug.	56.50	59.00	62.00	66.50	66.50	66.50
Sept.	56.50	59.00	63.00	66.50	66.50	66.50
Oct.	56.50	59.00	63.00	66.50	66.50	66.50
Nov.	56.50	59.00	63.00	66.50	66.50	66.50
Dec.	56.50	59.00	63.00	66.50	66.50	66.50
Average	56.50	57.69	61.08	65.42	66.50	66.50

BASIC PIG IRON, VALLEY

Mahoning, Shenango Valley, Gross Ton

	1947	1948†	1950	1951	1952	1953
Jan.	$30.00	$38.87	$46.00	$52.00	$52.00	$54.50
Feb.	30.00	39.00	46.00	52.00	52.00	54.50
Mar.	33.00	39.00	46.00	52.00	52.00	54.50
Apr.	33.00	39.00	46.00	52.00	52.00	54.50
May	33.00	39.00	46.00	52.00	52.00	54.50
June	33.00	39.00	46.00	52.00	52.00	54.50
July	34.20	42.00	46.00	52.00	52.50	56.00
Aug.	36.00	43.00	46.00	52.00	54.50	56.00
Sept.	36.00	43.00	46.75	52.00	54.50	56.00
Oct.	36.00	45.62	49.00	52.00	54.50	56.00
Nov.	36.00	46.00	49.00	52.00	54.50	56.00
Dec.	36.20	46.00	51.62	52.00	54.50	56.00
Average	34.78	41.62	47.03	52.00	53.08	55.25

	1954	1955	1956	1957	1958	1959
Jan.	$56.00	$56.00	$58.50	$62.50	$66.00	$66.00
Feb.	56.00	56.00	58.50	62.50	66.00	66.00
Mar.	56.00	56.00	58.50	64.50	66.00	66.00
Apr.	56.00	56.00	60.00	64.50	66.00	66.00
May	56.00	56.00	60.00	64.50	66.00	66.00
June	56.00	56.00	60.00	64.50	66.00	66.00
July	56.00	57.87	60.00	66.00	66.00	66.00
Aug.	56.00	58.50	62.50	66.00	66.00	66.00
Sept.	56.00	58.50	62.50	66.00	66.00	66.00
Oct.	56.00	58.50	62.50	66.00	66.00	66.00
Nov.	56.00	58.50	62.50	66.00	66.00	66.00
Dec.	56.00	58.50	62.50	66.00	66.00	66.00
Average	56.00	57.19	60.67	64.92	66.00	66.00

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† Price unchanged at $46.00 through 1949.

GRANITE CITY, ILL., PIG IRON

Foundry, Gross Ton, at Furnace

	1948	1949	1950	1951	1952	1953
Jan.	$39.25	$48.40	$48.40	$54.40	$54.40	$56.90
Feb.	40.00	48.40	48.40	54.40	54.40	56.90
Mar.	40.00	48.40	48.40	54.40	54.40	56.90
Apr.	40.00	48.40	48.40	54.40	54.40	56.90
May	41.43	48.40	48.40	54.40	54.40	56.90
June	45.75	48.40	48.40	54.40	54.40	56.90
July	45.75	48.40	48.40	54.40	54.90	58.40
Aug.	47.34	48.40	48.40	54.40	56.90	58.40
Sept.	48.40	48.40	48.40	54.40	56.90	58.40
Oct.	48.40	48.40	51.40	54.40	56.90	58.40
Nov.	48.40	48.40	51.40	54.40	56.90	58.40
Dec.	48.40	48.40	53.65	54.40	56.90	58.40
Average	44.42	48.40	49.34	54.40	55.48	57.65

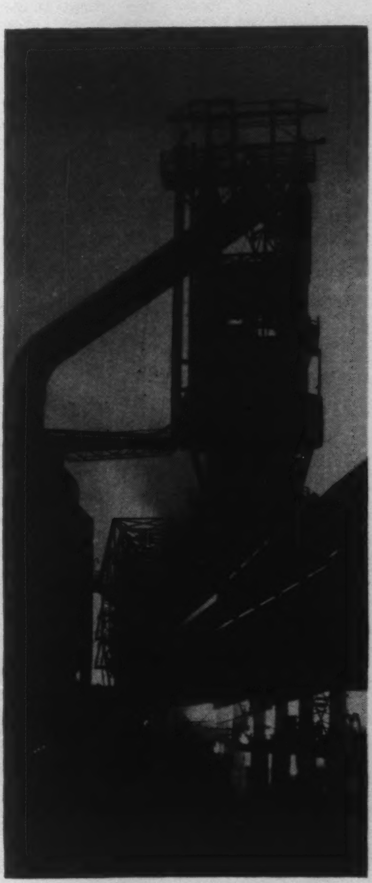
	1954	1955	1956	1957	1958	1959
Jan.	$58.40	$58.40	$60.90	$64.90	$68.40	$68.40
Feb.	58.40	58.40	60.90	64.90	68.40	68.40
Mar.	58.40	58.40	60.90	66.90	68.40	68.40
Apr.	58.40	58.40	62.40	66.90	68.40	68.40
May	58.40	58.40	62.40	66.90	68.40	68.40
June	58.40	58.40	62.40	66.90	68.40	68.40
July	58.40	60.27	62.40	68.40	68.40	68.40
Aug.	58.40	60.90	64.90	68.40	68.40	68.40
Sept.	58.40	60.90	64.90	68.40	68.40	68.40
Oct.	58.40	60.90	64.90	68.40	68.40	68.40
Nov.	58.40	60.90	64.90	68.40	68.40	68.40
Dec.	58.40	60.90	64.90	68.40	68.40	68.40
Average	58.40	59.59	63.07	67.32	68.40	68.40

BIRMINGHAM PIG IRON PRICES

Foundry Grade, Per Gross Ton

	1948	1949	1950	1951	1952	1953
Jan.	$37.38	$43.38	$39.38	$48.88	$48.88	$51.38
Feb.	37.38	43.38	42.38	48.88	48.88	51.38
Mar.	37.38	43.38	42.38	48.88	48.88	51.38
Apr.	37.38	43.38	42.38	48.88	48.88	51.38
May	38.38	39.71	42.38	48.88	48.88	51.38
June	39.38	39.38	42.38	48.88	48.88	51.38
July	31.04	39.38	42.38	48.88	49.38	52.88
Aug.	43.38	39.38	42.38	48.88	51.38	52.88
Sept.	43.38	39.38	42.67	48.88	51.38	52.88
Oct.	43.38	39.38	45.88	48.88	51.38	52.88
Nov.	43.38	39.38	45.88	45.88	51.38	52.88
Dec.	43.38	39.38	48.88	48.88	51.38	52.88
Average	40.43	40.74	43.53	48.88	49.96	52.13

	1954	1955	1956	1957	1958	1959
Jan.	$52.88	$52.88	$55.00	$59.00	$62.50	$62.50
Feb.	52.88	52.88	55.00	59.00	62.50	62.50
Mar.	52.88	52.88	55.00	59.00	62.50	62.50
Apr.	52.88	52.88	55.00	59.00	62.50	62.50
May	52.88	52.88	55.00	59.00	62.50	62.50
June	52.88	52.88	55.00	59.00	62.50	62.50
July	52.88	54.47	57.67	62.50	62.50	62.50
Aug.	52.88	55.00	58.65	62.50	62.50	62.50
Sept.	52.88	55.00	59.00	62.50	62.50	62.50
Oct.	52.88	55.00	59.00	62.50	62.50	62.50
Nov.	52.88	55.00	59.00	62.50	62.50	62.50
Dec.	52.88	55.00	59.00	62.50	62.50	62.50
Average	52.88	53.89	56.86	60.75	62.50	62.50



MALLEABLE PIG IRON PRICES

Per Gross Ton, Mahoning, Shenango Valley

	1947	1948†	1950	1951	1952	1953
Jan.	$30.50	$39.50	$46.50	$52.50	$52.50	$55.00
Feb.	30.50	39.50	46.50	52.50	52.50	55.00
Mar.	33.50	39.50	46.50	52.50	52.50	55.00
Apr.	33.50	39.50	46.50	52.50	52.50	55.00
May	33.50	39.50	46.50	52.50	52.50	55.00
June	33.50	39.50	46.50	52.50	52.50	55.00
July	34.70	42.50	46.50	52.50	53.00	56.50
Aug.	36.50	43.50	46.50	52.50	55.00	56.50
Sept.	36.50	43.50	47.50	52.50	55.00	56.50
Oct.	36.50	46.12	49.50	52.50	55.00	56.50
Nov.	36.50	46.50	49.50	52.50	55.00	56.50
Dec.	36.70	46.50	52.50	52.50	55.00	56.50
Average	34.36	42.13	47.58	52.50	53.75	55.75

	1954	1955	1956	1957	1958	1959
Jan.	$56.50	$56.50	$59.00	$63.00	$66.50	$66.50
Feb.	56.50	56.50	59.00	63.00	66.50	66.50
Mar.	56.50	56.50	59.00	65.00	66.50	66.50
Apr.	56.50	56.50	60.50	65.00	66.50	66.50
May	56.50	56.50	60.50	65.00	66.50	66.50
June	56.50	56.50	60.50	65.00	66.50	66.50
July	56.50	56.87	60.50	67.00	66.50	66.50
Aug.	56.50	59.00	63.00	67.00	66.50	66.50
Sept.	56.50	59.00	63.00	67.00	66.50	66.50
Oct.	56.50	59.00	63.00	67.00	66.50	66.50
Nov.	56.50	59.00	63.00	67.00	66.50	66.50
Dec.	56.50	59.00	63.00	67.00	66.50	66.50
Average	56.50	57.57	61.17	65.67	66.50	66.50

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† Price unchanged at $46.50 through 1949.

IRON ORE

Prices: Lake Superior ore, foundry and furnace coke . . . Iron ore analyses, ore shipments and prices for various grades.

LAKE SUPERIOR IRON ORE

Avge. Analyses, Combined Ranges, Grades

	Analyses, Pct				
Year	Iron, Natural	Phos.	Silica	Mang.	Moisture
1958	53.78	0.086	8.67	0.53	8.49
1957	52.14	0.089	9.39	0.65	9.83
1956	51.34	0.090	9.78	0.67	10.39
1955	50.63	0.099	10.11	0.72	10.81
1954	50.86	0.095	10.22	0.70	10.47
1953	50.37	0.090	10.25	0.75	10.90
1952	50.49	0.111	10.05	0.77	10.78
1951	50.25	0.090	9.87	0.77	11.22
1950	50.38	0.092	9.85	0.77	11.11
1949	50.39	0.096	9.72	0.78	11.12
1948	50.49	0.093	9.30	0.76	11.35
1947	50.91	0.093	9.09	0.75	11.28
1946	51.32	0.087	8.83	0.74	11.22
1945	51.69	0.089	8.52	0.72	10.96
1944	51.72	0.088	8.42	0.74	11.02
1943	51.58	0.091	8.32	0.82	11.06
1942	51.65	0.089	8.21	0.79	10.98

Source: American Iron Ore Assn.

LAKE SHIPMENTS OF IRON ORE

Lake Superior Shipments, Gross Tons

1941	79,941,000
1942	92,070,000
1943	85,116,000
1944	81,039,000
1945	75,207,000
1946	58,975,000
1947	77,210,278
1948	82,655,757
1949	69,556,269
1950	78,205,592
1951	89,092,012
1952	74,910,798
1953	95,844,449
1954	60,793,697
1955	87,459,853
1956	73,389,972
1957	84,615,871
1958	52,243,820
1959*	44,500,000

* Estimate.

Source: American Iron Ore Assn.

U. S. IRON ORE CONSUMPTION

In Long Tons

1949	91,123,220
1950	106,610,273
1951	114,837,112
1952	100,640,636
1953	122,124,661
1954	96,800,000
1955	114,989,933
1956	119,669,641
1957	124,941,763
1958	91,899,541
1959*	*90,200,000

* Estimate by The Iron Age.

Source: U. S. Bureau of Mines.

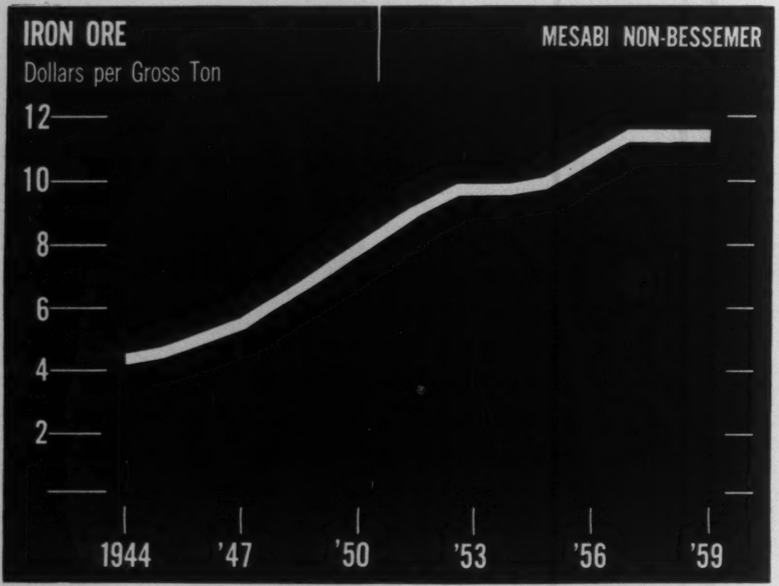
LAKE SUPERIOR IRON ORE PRICES Per Gross Ton at Lower Lake Ports

BESSEMER ORES

	Guarantee		Price	
	Iron Natural	Phosphorus Dry	Old Range	Mesabi
1945 to June 24, 1946	51.50	0.045	4.95	4.70
1946–June 24 to Dec. 31	51.50	0.045	5.45	5.20
1947 to Apr. 1, 1948	51.50	0.045	59.5	5.70
1948–Apr. 1 on	51.50	0.045	6.60	6.35
1949	51.50	0.045	7.60	7.35
1950–Feb. 1 to Dec. 1	51.50	0.045	8.10	7.85
1950–Dec. 1 on	51.50	0.045	8.70	8.45
1951	51.50	0.045	8.70	8.45
1952 to July 25	51.50	0.045	8.70	8.45
1952–July 26 on	51.50	0.045	9.45	9.20
1953 to June 30	51.50	0.045	10.10	9.85
1953–July 1 on	51.50	0.045	10.30	10.05
1954	51.50	0.045	10.30	10.05
1955	51.50	0.045	10.40	10.25
1956	51.50	0.045	11.25	11.00
1957	51.50	0.045	11.85	11.60
1958	51.50	0.045	11.85	11.60
1959	51.50	0.045	11.85	11.60

NON-BESSEMER

	Guarantee	Price		
	Iron Natural	Old Range	Mesabi	High Phosphorus
1945 to June 24, 1946	51.50	4.80	4.55	4.55
1946–June 24 to Dec. 31	51.50	5.30	5.05	5.05
1947 to Apr. 1, 1948	51.50	5.80	5.55	5.55
1948–Apr. 1 on	51.50	6.45	6.20	6.20
1949	51.50	7.45	7.20	7.20
1950–Feb. 1 to Dec. 1	51.50	7.95	7.70	7.70
1950–Dec. 1 on	51.50	8.55	8.30	8.30
1951	51.50	8.55	8.30	8.30
1952 to July 25	51.50	8.55	8.30	8.30
1952–July 26 on	51.50	9.30	9.05	9.05
1953 to June 30	51.50	9.95	9.70	9.70
1953–July 1 on	51.50	10.15	9.90	9.90
1954	51.50	10.15	9.90	9.90
1955	51.50	10.25	10.10	10.00
1956	51.50	11.10	10.85	10.85
1957	51.50	11.70	11.45	11.45
1958	51.50	11.70	11.45	11.45
1959	51.50	11.70	11.45	11.45



CONNELLSVILLE FOUNDRY COKE

Net Ton at Oven, Monthly Review

	1948	1949	1950	1951	1952	1953
Jan.	$14.00	$16.94	$15.75	$17.25	$17.75	$17.75
Feb.	14.00	16.75	15.75	17.25	17.75	17.75
Mar.	14.00	16.50	16.25	17.50	17.75	17.63
Apr.	14.00	16.50	15.25	17.75	17.75	17.25
May	14.00	16.38	16.25	17.75	17.75	17.25
June	16.00	16.25	16.25	17.75	17.75	17.25
July	16.50	16.13	16.25	17.75	17.75	17.25
Aug.	17.00	15.75	16.25	17.75	17.75	17.25
Sept.	17.00	15.75	16.25	17.75	17.75	16.95
Oct.	17.00	15.75	16.75	17.75	17.75	16.75
Nov.	17.00	15.75	16.75	17.75	17.75	16.75
Dec.	17.00	15.75	17.12	17.75	17.75	16.75
Average	15.62	16.18	16.32	17.65	17.75	17.22

	1954	1955	1956	1957	1958	1959
Jan.	$16.75	$16.75	$16.25	$18.25	$18.25	$18.25
Feb.	16.75	16.75	16.25	18.25	18.25	18.25
Mar.	16.75	16.75	16.25	18.25	18.25	18.25
Apr.	16.75	16.75	17.50	18.25	18.25	18.25
May	16.75	16.35	17.50	18.25	18.25	18.25
June	16.75	16.25	17.50	18.25	18.25	18.25
July	16.75	16.25	17.50	18.25	18.25	18.25
Aug.	16.75	16.25	17.50	18.25	18.25	18.25
Sept.	16.75	16.25	17.50	18.25	18.25	18.25
Oct.	16.75	16.25	17.50	18.25	18.25	18.25
Nov.	16.75	16.25	18.25	18.25	18.25	18.25
Dec.	16.75	16.25	18.25	18.25	18.25	18.25
Average	16.75	16.42	17.31	18.25	18.25	18.25

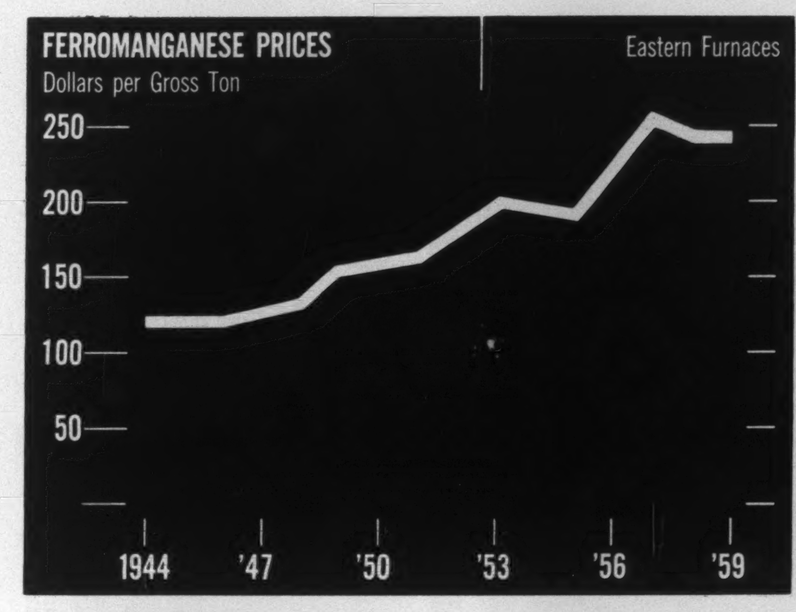
CONNELLSVILLE FURNACE COKE

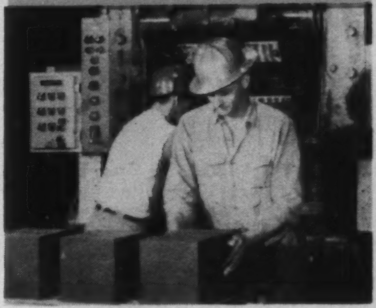
Net Ton at Oven, Monthly Review

	1948	1949	1950	1951	1952	1953
Jan.	$12.50	$16.56	$14.00	$14.25	$14.75	$14.75
Feb.	12.50	15.25	14.00	14.25	14.75	14.75
Mar.	12.50	14.50	14.13	14.50	14.75	14.75
Apr.	12.50	14.50	14.25	14.75	14.75	14.75
May	12.50	14.38	14.25	14.75	14.75	14.75
June	12.70	14.25	14.25	14.75	14.75	14.75
July	13.68	14.25	14.25	14.75	14.75	14.75
Aug.	14.75	14.25	14.25	14.75	14.75	14.75
Sept.	15.00	14.25	14.25	14.75	14.75	14.53
Oct.	15.00	14.25	14.25	14.75	14.75	14.38
Nov.	15.00	14.20	14.25	14.75	14.75	14.38
Dec.	15.00	14.00	14.25	14.75	14.75	14.38
Average	13.63	14.58	14.20	14.65	14.75	14.64

	1954	1955	1956	1957	1958	1959
Jan.	$14.38	$14.38	$14.25	$15.38	$15.38	$14.50
Feb.	14.38	14.38	14.25	15.38	15.38	15.00
Mar.	14.38	14.38	14.25	15.38	15.38	15.00
Apr.	14.38	13.34	14.50	15.38	15.38	15.00
May	14.38	13.15	14.50	15.38	15.38	15.00
June	14.38	13.25	14.50	15.38	15.38	15.00
July	14.38	13.25	14.50	15.38	15.38	15.00
Aug.	14.38	13.25	14.62	15.38	14.50	15.00
Sept.	14.38	13.25	14.62	15.38	14.50	15.00
Oct.	14.38	13.25	14.62	15.38	15.50	15.00
Nov.	14.38	14.25	15.28	15.38	14.50	15.00
Dec.	14.38	14.25	15.50	15.38	14.50	15.13
Average	14.38	13.69	14.62	15.38	15.01	14.96

Ferroalloys, Furnace Bricks





FERROMANGANESE

Eastern Producers, Carloads, Cents Per Lb

	1942**	1947**	1948†	1949	1950	1951	1952	1953‡	1954‡	1955	1956	1957	1958	1959
Jan.	5.36	6.03	6.47	7.21	7.74	8.27	8.31	10.10	10.00	9.50	10.25	12.75	12.25	12.25
Feb.	5.36	6.03	6.47	7.21	7.74	8.31	8.31	10.10	10.00	9.50	10.25	12.75	12.25	12.25
Mar.	5.36	6.03	6.47	7.56	7.74	8.31	8.31	10.10	10.00	9.50	10.25	12.75	12.25	12.25
Apr.	5.36	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.65	12.75	12.25	12.25
May	6.03	6.03	6.47	7.74	7.74	8.31	8.31	10.12	10.00	9.50	10.75	12.85	12.25	12.25
June	6.03	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.75	12.75	12.25	12.25
July	6.03	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.75	12.75	12.25	12.25
Aug.	6.03	6.03	6.47	7.74	7.74	8.31	9.65	10.00	10.00	9.50	10.75	12.75	12.25	12.25
Sept.	6.03	6.03	6.47	7.74	7.74	8.31	10.00	10.00	9.50	9.50	11.25	12.50	12.25	12.25
Oct.	6.03	6.47	7.23	7.74	7.74	8.31	10.00	10.00	9.50	9.50	11.75	12.25	12.25	12.25
Nov.	6.03	6.47	7.23	7.74	7.97	8.31	10.00	10.00	9.50	9.50	11.75	12.25	12.25	12.25
Dec.	6.03	6.47	7.23	7.74	8.09	8.31	10.00	10.00	9.50	10.25	12.00	12.25	12.25	12.25
Average	5.80	6.14	6.96	7.64	7.79	8.31	9.02	10.04	9.83	10.91	10.94	12.60	12.25	12.25

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† Seaboard price prior to Oct. 7, 1948. ‡ Starting June, 1953, prices reflect new standard of 74 to 76 pct Mn. Prices prior to that converted from older gross ton pricing method and were based on standard of 78–82 pct Mn. ** Price unchanged at 6.03¢ from 1943 through 1946.

SPIEGELEISEN, 19 TO 21 PCT.

Palmerton, Pa., Carloads, Gross Ton

	1954	1955	1956	1957	1958	1959
Jan.	$86.00	$86.00	$91.50	$102.50	$102.50	$102.50
Feb.	86.00	86.00	91.50	102.50	102.50	102.50
Mar.	86.00	86.00	91.50	102.50	102.50	102.50
Apr.	86.00	86.00	94.00	102.50	102.50	102.50
May	86.00	86.00	94.00	102.50	102.50	102.50
June	86.00	86.00	94.00	102.50	102.50	102.50
July	86.00	86.00	94.00	102.50	102.50	102.50
Aug.	86.00	86.00	96.00	102.50	102.50	102.50
Sept.	86.00	86.00	96.00	102.50	102.50	102.50
Oct.	86.00	87.50	99.50	102.50	102.50	102.50
Nov.	86.00	88.00	99.50	102.50	102.50	102.50
Dec.	86.00	88.00	99.50	102.50	102.50	102.50
Average	86.00	86.45	95.08	102.50	102.50	102.50

50 PCT FERROSILICON

Cents per lb contained Si, Carloads, Delivered*

	1954	1955	1956	1957	1958	1959
Jan.	12.40	12.00	12.75	13.90	14.20	14.60
Feb.	12.40	12.00	12.75	13.90	14.20	14.60
Mar.	12.40	12.00	12.75	13.00	14.20	14.60
Apr.	10.80	11.00	12.75	13.00	14.20	14.60
May	10.80	11.00	12.75	13.00	14.20	14.60
June	10.80	11.00	12.75	13.00	14.20	14.60
July	10.80	11.00	12.75	13.00	14.20	14.60
Aug.	10.80	11.00	12.75	13.00	14.20	14.60
Sept.	11.52	11.00	13.15	13.00	14.20	14.60
Oct.	12.00	11.75	13.50	13.00	14.60	14.60
Nov.	12.00	11.75	13.50	13.00	14.60	14.60
Dec.	12.00	11.75	13.90	13.00	14.60	14.60
Average	11.56	11.43	12.00	13.15	14.30	14.60

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* F.o.b. shipping point after Oct. 1, 1955.

BONDED MAGNESITE BRICK

F.o.b. Baltimore, Dollars per Net Ton

	1953	1954	1955	1956	1957	1958	1959
Jan.	$97.50	$97.50	$97.50	$102.00	$109.00	$116.00	$119.00
Feb.	97.50	97.50	97.50	102.00	109.00	116.00	119.00
Mar.	97.50	97.50	97.50	102.00	109.00	116.00	119.00
Apr.	97.50	97.50	97.50	102.00	116.00	116.00	119.00
May	97.50	97.50	97.50	102.00	116.00	116.00	119.00
June	97.50	97.50	97.50	102.00	116.00	116.00	119.00
July	97.50	97.50	97.50	102.00	116.00	116.00	119.00
Aug.	97.50	97.50	97.50	109.00	116.00	116.00	119.00
Sept.	97.50	97.50	97.50	109.00	116.00	116.00	119.00
Oct.	97.50	97.50	97.50	109.00	116.00	119.00	119.00
Nov.	97.50	97.50	102.00	109.00	116.00	119.00	119.00
Dec.	97.50	97.50	102.00	109.00	116.00	119.00	119.00
Avg.	97.50	97.50	98.59	104.92	114.25	116.75	119.00

BURNED MAGNESITE BRICK

F.o.b. Baltimore, Dollars per Net Ton

	1953	1954	1955	1956	1957	1958	1959
Jan.	$109.00	$109.00	$109.00	$114.00	$121.00	$131.00	$140.00
Feb.	109.00	109.00	109.00	114.00	121.00	131.00	140.00
Mar.	109.00	109.00	109.00	114.00	121.00	131.00	140.00
Apr.	109.00	109.00	109.00	114.00	131.00	131.00	140.00
May	109.00	109.00	109.00	114.00	131.00	131.00	140.00
June	109.00	109.00	109.00	114.00	131.00	131.00	140.00
July	109.00	109.00	109.00	114.00	131.00	131.00	140.00
Aug.	109.00	109.00	109.00	121.00	131.00	131.00	140.00
Sept.	109.00	109.00	109.00	121.00	131.00	131.00	140.00
Oct.	109.00	109.00	109.00	121.00	131.00	140.00	140.00
Nov.	109.00	109.00	114.00	121.00	131.00	140.00	140.00
Dec.	109.00	109.00	114.00	121.00	131.00	140.00	140.00
Avg.	109.00	109.00	109.83	116.92	128.50	133.25	140.00

CHEM. BONDED CHROME BRICK

F.o.b. Baltimore, Dollars per Net Ton

	1953	1954	1955	1956	1957	1958	1959
Jan.	$86.00	$86.00	$86.00	$91.00	$98.00	$105.00	$109.00
Feb.	86.00	86.00	86.00	91.00	98.00	105.00	109.00
Mar.	86.00	86.00	86.00	91.00	98.00	105.00	109.00
Apr.	86.00	86.00	86.00	91.00	105.00	105.00	109.00
May	86.00	86.00	86.00	91.00	105.00	105.00	109.00
June	86.00	86.00	86.00	91.00	105.00	105.00	109.00
July	86.00	86.00	86.00	91.00	105.00	105.00	109.00
Aug.	86.00	86.00	86.00	98.00	105.00	105.00	109.00
Sept.	86.00	86.00	86.00	98.00	105.00	105.00	109.00
Oct.	86.00	86.00	86.00	98.00	105.00	109.00	109.00
Nov.	86.00	86.00	91.00	98.00	105.00	109.00	109.00
Dec.	86.00	86.00	91.00	98.00	105.00	109.00	109.00
Average	86.00	86.00	86.83	93.92	103.25	106.00	109.00

SILICA BRICK STANDARD GRADE

Mt. Union, Pa., Ensley, Ala., Carloads per 1000 Brick, F.o.b. plant

	1954	1955	1956	1957	1958	1959
Jan.	$115.00	$120.00	$128.00	$140.00	$150.00	$158.00
Feb.	115.00	120.00	128.00	140.00	150.00	158.00
Mar.	115.00	120.00	128.00	140.00	150.00	158.00
Apr.	115.00	120.00	128.00	150.00	150.00	158.00
May	115.00	120.00	128.00	150.00	150.00	158.00
June	115.00	120.00	128.00	150.00	150.00	158.00
July	115.00	124.00	128.00	150.00	150.00	158.00
Aug.	115.00	128.00	140.00	150.00	150.00	158.00
Sept.	119.00	128.00	140.00	150.00	150.00	158.00
Oct.	120.00	128.00	140.00	150.00	158.00	158.00
Nov.	120.00	128.00	140.00	150.00	158.00	158.00
Dec.	120.00	128.00	140.00	150.00	158.00	158.00
Average	116.58	123.66	133.00	147.50	152.00	158.00

HEAVY DUTY FIRE CLAY BRICK

Pa.,* Ky., Mo., Ill., Md., Ohio, F.o.b. Plant**

	1953	1954	1955	1956	1957	1958	1959
Jan.	$99.30	$109.00	$114.00	$122.00	$128.00	$135.00	$140.00
Feb.	99.30	109.00	114.00	122.00	128.00	135.00	140.00
Mar.	99.30	109.00	114.00	122.00	128.00	135.00	140.00
Apr.	99.30	109.00	114.00	122.00	135.00	135.00	140.00
May	99.30	109.00	114.00	122.00	135.00	135.00	140.00
June	99.30	109.00	114.00	122.00	135.00	135.00	140.00
July	99.30	109.00	118.00	122.00	135.00	135.00	140.00
Aug.	99.30	109.00	122.00	128.00	135.00	135.00	140.00
Sept.	105.12	113.00	122.00	128.00	135.00	135.00	140.00
Oct.	109.00	114.00	122.00	128.00	135.00	140.00	140.00
Nov.	109.00	114.00	122.00	128.00	135.00	140.00	140.00
Dec.	109.00	114.00	122.00	128.00	135.00	140.00	140.00
Avg.	102.21	110.58	117.66	124.50	133.25	136.25	140.00

---

* Add $5.00 for Salina, Pa., after May, 1949.
** Carloads per 1000 brick.

Steel Scrap

CHICAGO

Prices of No. 1 Scrap, Per Gross Ton

	1954	1955	1956	1957	1958	1959
Jan.	$28.13	$34.50	$50.10	$57.90	$31.75	$43.00
Feb.	25.50	34.00	46.63	49.00	37.00	44.25
Mar.	24.50	34.90	48.00	44.00	35.25	40.10
Apr.	28.13	35.50	54.00	39.50	28.70	33.50
May	30.38	32.90	50.50	42.00	31.75	32.00
June	31.40	33.25	44.00	51.10	35.10	34.50
July	28.88	38.00	44.50	51.75	39.25	35.50
Aug.	29.50	40.90	55.50	52.63	44.00	36.75
Sept.	30.00	41.75	59.00	46.50	44.90	39.70
Oct.	33.75	43.25	56.90	36.50	42.50	43.25
Nov.	33.30	43.70	62.50	31.75	42.75	44.00
Dec.	33.00	49.13	65.00	30.50	33.70	40.30
Average	29.71	38.48	53.05	44.43	37.22	38.90

No. 2 Bundles

	1954	1955	1956	1957	1958	1959
Jan.	$21.75	$24.50	$40.13	$44.40	$22.25	$31.25
Feb.	19.75	24.50	37.75	39.75	28.25	31.50
Mar.	17.88	24.50	37.30	37.50	26.00	28.90
Apr.	19.40	24.50	41.50	34.00	21.70	21.75
May	22.25	23.13	36.80	34.80	24.25	21.75
June	21.88	23.60	32.75	42.13	27.50	24.50
July	20.38	27.13	34.00	41.50	29.25	24.50
Aug.	21.75	31.50	43.10	40.80	32.00	25.75
Sept.	21.75	31.90	44.75	33.88	31.50	27.10
Oct.	24.38	33.38	42.25	23.70	29.50	30.00
Nov.	23.56	34.19	46.00	20.25	31.50	30.50
Dec.	23.50	39.95	50.25	19.50	31.50	26.50
Average	21.52	28.56	40.55	34.35	27.93	27.00

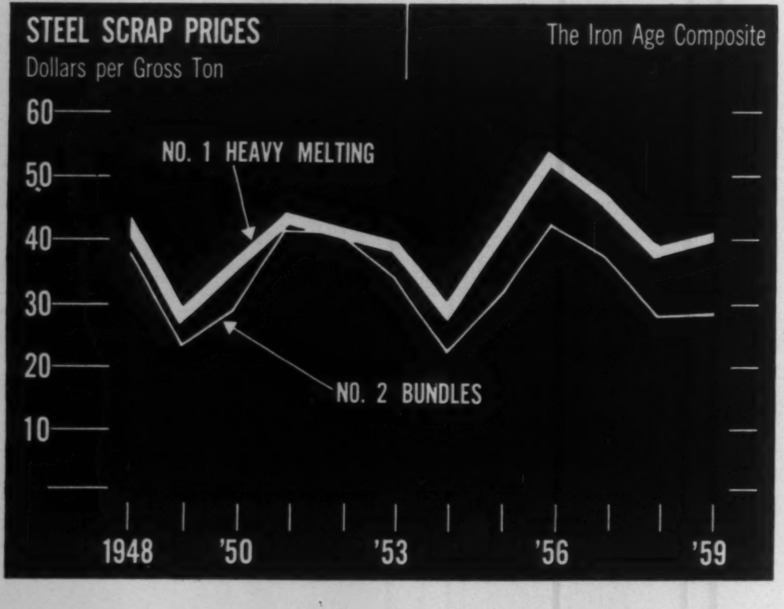
PHILADELPHIA

Prices of No. 1 Scrap, Per Gross Ton

	1954	1955	1956	1957	1958	1959
Jan.	$27.63	$32.87	$54.10	$59.50	$37.13	$35.75
Feb.	25.00	37.00	50.63	57.00	38.00	39.50
Mar.	22.10	38.40	50.40	52.75	38.00	37.30
Apr.	21.50	37.00	54.63	46.88	36.40	33.75
May	22.75	35.60	53.30	50.25	34.00	34.00
June	22.75	38.50	46.75	56.10	33.60	36.70
July	23.25	40.50	48.25	54.00	34.75	39.00
Aug.	26.00	45.50	55.80	51.25	37.75	39.50
Sept.	28.13	45.70	58.38	46.38	39.90	41.10
Oct.	30.75	46.50	56.80	37.70	40.50	44.75
Nov.	32.70	47.10	59.25	33.75	37.62	46.00
Dec.	31.38	51.00	62.50	34.00	43.50	42.70
Average	26.16	41.31	54.23	48.30	37.60	39.17

No. 2 Bundles

	1954	1955	1956	1957	1958	1959
Jan.	$22.75	$26.00	$45.50	$49.40	$26.50	$24.38
Feb.	20.00	28.50	41.63	47.63	27.50	26.00
Mar.	17.25	30.80	40.10	42.25	27.50	24.80
Apr.	17.50	28.50	44.13	36.00	25.30	21.75
May	18.50	27.13	42.30	39.50	23.50	21.50
June	18.00	27.50	36.00	48.13	23.50	23.50
July	17.75	31.75	37.25	46.38	23.50	26.75
Aug.	18.50	36.50	44.50	43.00	24.00	27.25
Sept.	21.00	38.50	47.25	37.50	24.50	27.20
Oct.	25.50	37.50	45.63	28.50	25.25	29.00
Nov.	27.75	37.25	49.10	24.75	23.25	30.00
Dec.	25.80	42.50	52.13	24.60	23.10	26.90
Average	21.11	32.70	43.79	38.97	24.78	25.75



Average of Iron Age Scrap Prices Pittsburgh, Chicago, Philadelphia Per Gross Ton

No. 1 Heavy Melting

	1954	1955	1956	1957	1958	1959
Jan.	$28.67	$34.62	$52.33	$59.37	$33.88	$41.08
Feb.	25.92	36.16	48.75	53.17	37.17	43.66
Mar.	23.83	37.27	49.43	48.50	36.58	40.43
Apr.	25.38	36.50	54.88	42.80	32.73	35.08
May	27.79	34.48	51.17	46.17	33.50	34.41
June	27.88	34.96	45.08	54.23	35.40	37.90
July	26.87	39.50	46.42	54.00	38.25	39.33
Aug.	28.33	43.96	56.10	52.96	42.08	39.91
Sept.	29.71	44.25	58.58	47.29	43.30	41.70
Oct.	32.83	44.75	56.80	37.37	42.67	44.83
Nov.	33.40	45.47	61.67	32.83	41.70	45.67
Dec.	32.46	50.42	64.59	32.33	39.90	41.90
Average	28.59	40.19	53.82	46.75	38.09	40.49

No. 2 Bundles

	1954	1955	1956	1957	1958	1959
Jan.	$23.25	$26.33	$43.29	$47.43	$25.83	$29.21
Feb.	20.67	27.46	40.13	44.04	28.75	30.33
Mar.	18.38	28.83	40.03	39.58	27.50	28.27
Apr.	19.73	27.17	43.88	34.75	24.03	23.33
May	22.25	25.67	39.73	38.07	24.67	23.33
June	21.63	26.07	35.08	45.84	26.17	25.50
July	20.54	30.46	36.42	44.88	27.58	26.92
Aug.	21.25	35.17	44.40	43.17	29.67	27.50
Sept.	22.42	35.77	46.50	37.13	29.10	28.20
Oct.	25.79	36.13	44.88	27.80	28.75	30.50
Nov.	26.27	35.73	48.33	24.66	29.33	31.33
Dec.	25.07	41.32	51.63	24.20	28.70	28.23
Average	22.27	31.34	42.86	37.63	27.53	27.72

PITTSBURGH

Prices of No. 1 Scrap, Per Gross Ton

	1954	1955	1956	1957	1958	1959
Jan.	$30.25	$36.50	$52.50	$60.70	$32.75	$44.50
Feb.	27.25	37.50	49.00	53.50	36.50	47.25
Mar.	24.90	38.50	49.90	48.75	36.50	43.90
Apr.	26.50	37.00	56.00	42.00	33.10	38.00
May	30.25	34.70	49.70	46.25	34.75	37.25
June	29.50	35.25	44.50	55.50	37.50	42.50
July	28.50	40.00	46.50	56.25	40.75	43.50
Aug.	29.50	45.00	57.00	55.00	44.50	43.50
Sept.	31.00	44.50	58.38	49.00	44.50	44.30
Oct.	34.00	44.50	56.70	37.90	45.00	46.50
Nov.	34.20	45.80	63.25	33.00	44.75	47.00
Dec.	33.00	51.13	66.25	32.50	42.50	42.70
Average	29.90	40.87	54.14	47.53	39.42	43.40

No. 2 Bundles

	1954	1955	1956	1957	1958	1959
Jan.	$25.25	$28.50	$44.25	$48.50	$28.75	$32.00
Feb.	22.25	29.38	41.00	44.75	30.50	33.50
Mar.	20.00	31.20	42.70	39.00	29.00	31.10
Apr.	22.30	28.50	46.00	34.25	25.10	26.50
May	26.00	26.75	40.10	39.90	26.25	26.75
June	25.00	27.10	36.50	47.25	27.50	28.50
July	23.50	32.50	38.00	46.75	30.00	29.50
Aug.	23.50	37.50	45.60	45.70	33.00	29.50
Sept.	24.50	36.90	47.50	40.00	31.30	30.30
Oct.	27.50	37.50	46.75	31.30	31.50	32.50
Nov.	27.50	35.75	49.90	29.00	33.25	33.50
Dec.	25.90	41.50	52.50	28.50	31.50	31.30
Average	24.43	32.76	44.23	39.57	29.89	30.41

SCRAP FORECAST: During 1960, scrap dealers and brokers will ship about 32-34 million tons of scrap to domestic mills and foundries and export markets. That's the prediction of Edwin C. Barringer, executive vice president of the Institute of Scrap Iron & Steel. Domestic demand for scrap should be 6 million tons above 1959, he adds.

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get more production with
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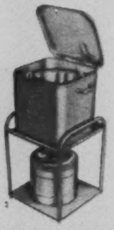
When you can keep skilled machinists where they belong—at their machines, doing productive work—you're saving their time and increasing *your* production. Place a Protectoseal Safety Wash or Dip Tank at or near your machines and enable machine operators to wash or clean parts for further work or for inspection *at the job,* and eliminate the unnecessary trips to a centrally located cleaning station.

Protectoseal Wash and Dip Tanks are designed for safe handling of flammable cleaning solutions. A renewable fusible link automatically drops the cover to snuff out fire. All Protectoseal Tanks are Factory Mutual approved, and are available in many types and sizes.

PROTECTOSEAL WASH AND DIP TANK STATION
Complete, self-contained stations, available in various sizes and combinations to meet individual requirements include: Work High Stands, Wash and Dip Tanks in various capacities, Self-Draining Parts Baskets, and 5 Gallon Safety Storage Containers for replenishing tank solvent supply.



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MACHINE BENCH CAN
For attachment to machine or bench. Depressing dasher (fire screen) immerses parts in solvent. Spring action returns dasher to original position, allowing parts to drain. 10"x7"x8" deep; cap. 2 gallons.

BENCH PLUNGER CAN
Fire-protective dasher depressed by hand, delivers measured amount of cleaning solvent to rag, swab, brush. Reduces evaporation losses, minimizes hazard of explosive and toxic vapors. 5 sizes.

AIR-MATIC PARTS WASHER
Air operated small parts washer. Parts in basket are moved through cleaning solvent. Requires no operator attention during washing. 15"x15" square, 25½" high. Capacity, 6 gal.; 30 lb. basket load.

Write for Protectoseal Catalog of fire-safe products for handling, dispensing, and use of flammable solvents in production operations.

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COMPANY
1926 S. Western Ave.-Chicago 8, Illinois

THE YEAR IN REVIEW

1959: Prosperity Despite Labor Crisis

Strikes set records as industry tries to halt inflation and meet foreign competition.

Khrushchev visits U. S.; Ike tours the world; compact cars off to steel-starved start.

January

- The year opened on a note of cautious optimism as industry leaders predicted "a fairly good year—but nothing like a boom." Steel mills were operating at 75 pct of capacity (rated at 147.6 million ingot tons per year). A few of the smarter buyers were thinking of building inventory as a hedge against a possible steel strike. By month's end severe hedge buying fever had set in and steel mill scheduling departments were in a frenzy.

Machine tool builders, pushing to rebuild backlogs, reported January new orders 50 pct ahead of those of a year ago. Personal income set a new record at $362.3 billion and the Federal Reserve Index moved up a point to 143—17 pct above the '58 low set in April. (All FRB Index references in this report are to the seasonally adjusted combined index.)

Caribbean Crisis — Fidel Castro took over in Cuba, warned the U. S. to mind its own business. Few Americans took this seriously.

Hard coal operators followed the soft coal pattern in raising wages $1 a day, boosting vacation and welfare fund payments, raised prices as much as $1 a ton. Eisenhower's annual Economic Report urged unions to gear wage demands to productivity. Hoffa called off his threat to organize policemen.

Soviet Smiles—Anastas Mikoyan, USSR Deputy Premier, landed in Washington on Jan. 4 to spread a little sunshine and pick up a trade deal, including a huge loan to buy machinery. He flew home with no deal on Jan. 29—leaving the impression in the minds of thousands of ingenuous Americans that the cold war was a thing of the past.

Meanwhile, back at the launching pad in Siberia, his buddies shot a rocket to the moon. It carried a 796-lb instrument package, missed the moon by only 5500 miles.

Steel scrap (The IRON AGE Composite) moved up $2.76 a ton; lead dropped a cent to 11.80.

February

- The probability of labor trouble moved closer as both steel management and the union stepped up their advertising campaigns to win public support in what promised even then to be a real union-management crisis. Panic moved into the steel market as buyers tried unsuccessfully to build inventory.

Steel operations soared from 77 to 90 pct during the month. For the second month in a row, steel imports exceeded exports. New orders for machine tools, at $45.4 million, set an 18-month record.

Merger Banned—Bethlehem Steel and Youngstown Sheet & Tube abandoned merger plans without appealing an adverse U. S. District Court ruling.

An IRON AGE study showed exports trending down in steel, automotive, aircraft, agricultural and industrial machinery. Only railroad equipment, office machinery and electronics were running counter to the trend.

Castro was reported ready to

move against Freeport Nickel's nickel-cobalt operation.

Secretary Dulles returned after a conference on Russia's Berlin ultimatum, entered a hospital for surgery.

Prices Rise — The Commerce Dept. clamped export controls on copper, charging too much was going to Russia. Copper rose 1¢ (to 30¢) for the month. Tin moved up sharply to 103.75¢ per lb, from 99.875¢; lead lost another ½¢, closing at 11.30¢. Steelmaking scrap turned soft in mid-month, ended at $43.17 per gross ton.

A U. S. Vanguard missile put a 21.2-lb sphere into orbit; a Titan ICBM again blew up on the launching pad. Russia's 796-lb moon shot instrument package was presumably orbiting the sun.

March

- With the approach of spring, business began busting out all over. Looking at unemployment of 4.4 million, Labor Secretary Mitchell predicted that it would be less than three million by the third quarter. Gross national product hit a record $470.2 billion rate as the first quarter closed, up from $457.1 billion at year's end. New machine tool orders were up another 13 pct. Some steel buyers began to place third quarter orders but few succeeded in building inventory; they were using it too fast. Industrial production and factory pay set new records.

National Steel said it would build a $300 million strip mill in the Chicago area, bringing total steel industry capital spending "plans" for the year to more than $1.3 billion.

Compact Cars—Ford broke the auto industry's worst-kept secret, being the first officially to announce its entry into the economy car field. The IRON AGE said Chevrolet's entry would be a rear-engine job, that Chrysler would be last into production.

Hawaii become the fiftieth state, to the considerable financial embarrassment of U. S. flag makers.

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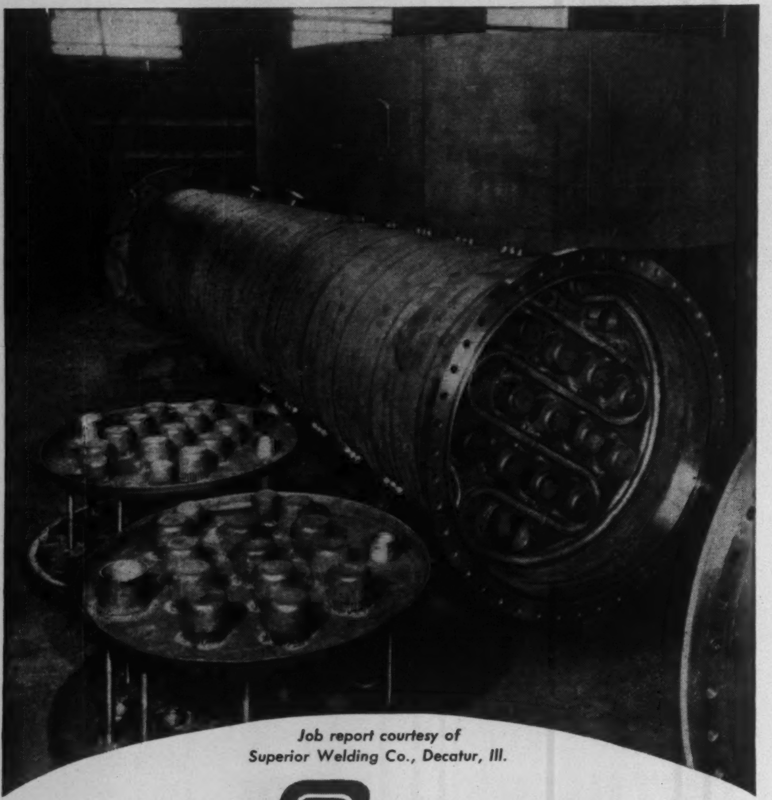
When corrosion is a threat to the life of Stainless Welds



Job report courtesy of Superior Welding Co., Decatur, Ill.

WELD WITH ARCOS

STAINLESS ELECTRODES

This is a nitric acid absorption column for the chemical industry. The shell and flanges of solid 304 ELC stainless were welded with Arcos CHROMEND 19-9 Cb Electrodes to resist chemical attack at 150 p.s.i.g. and 300°F. Arcos CHROMEND K-LC Electrodes were used for welding the bubble caps and coil clips. Together, these two Arcos Electrodes proved the point: there's no substitute for quality weld metal when long uninterrupted service is essential. ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Pa.

Hold the Line—President Eisenhower declared that steel labor talks must not bring higher prices. That, he said, would raise the threat of controls. His anti-inflation drive was still successful; the cost of living index held at 123.7; about where it had been for a year.

A Supreme Court ruling made it legal for states to levy taxes on the total net income of out-of-state companies who sell in that state.

Missile Misses—The Air Force announced that Discoverer I was in orbit, Army's Army's Pioneer IV missed the moon by 37,000 miles to orbit about the sun.

The Scrap Composite dropped nearly \$3 for the month, closing at \$40.50, as continued sinter development weakened demand for purchased scrap. Copper was up 1½¢ to 31.50 and lead gained ½¢ to 10.80. Zinc was steady; tin dropped 1½¢ to 102.75¢ per lb.

April

- Unemployment continued to make headlines. In Washington the AFL-CIO rallied some 7000 members to protest lack of heavy federal spending to relieve unemployment. There, Secretary Mitchell repeated his prediction that unemployment would be less than three million by October, promised to eat his hat if proved wrong. The President's economic advisers continued to insist a business pickup was on the way, argued against "buying way out" of recession.

The IRON AGE April 2 issue carried a study of metalworking's capital appropriations showing a 35 pct upturn in appropriations. It predicted "moderate but firm improvement." Elsewhere it noted that "the year is rapidly shaping up into a pretty rough bargaining period," pointed out that the strong business comeback hampered steel inventory buildup.

Steel Strike Seen—U. S. Steel chairman Roger M. Blough and

Sen. Joseph C. O'Mahoney tangled horns over a bill the latter proposed to force industry to give advance notice of price increases. Mr. Blough's strong talk apparently failed to convince the subcommittee that labor costs were responsible for inflation. Said The IRON AGE: "The union will have to strike to get the kind of demands it is talking about publicly and privately."

The USWA rejected an industry proposal to freeze wages for one year, asked for price freeze, wage increase.

One Strike Settled—Allis Chalmers and the UAW signed a 2½-year pact ending an 11-week strike of 14,000. It provided 6¢ per hr in the fall of '59, '60 and '61; plus fringes.

The Dalai Lama escaped to India following brutal Chinese Communist suppression of the revolt in Tibet.

Secretary Dulles, suffering from cancer, resigned, Christian Herter succeeded him, left shortly for the Foreign Ministers Conference in Paris.

Scrap Slips — Scrap prices dropped $4 during the month, sending The IRON AGE Composite down to $33.83. Copper and lead were unchanged.

The Air Force put Discoverer II into polar orbit. Two Vanguards failed.

May

- Steel users could not build stocks as business boomed. The FRB Index reached 153, or 11 points above the year-end figure; in durable the gain was from 152 to 169. Personal income hit a new record at $381.3 billion. The Federal Reserve Board increased the discount rate, tightened stock trading rules.

Makers of most of the nation's heat treating furnaces and equipment toted up April orders, discovered they topped those of the first three months combined.

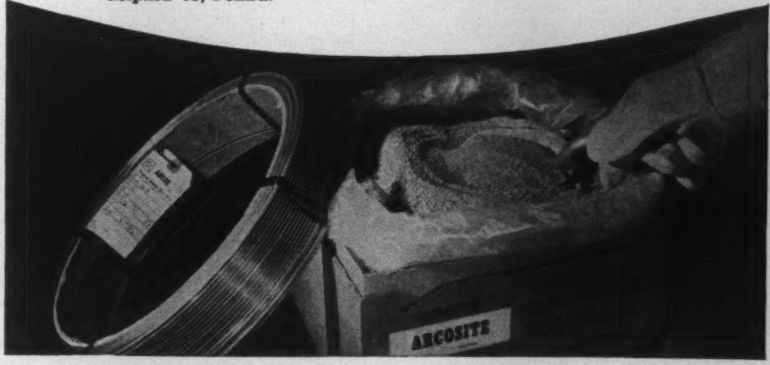
Nonferrous Picks Up — Aluminum operations, sparked by a little

For predictable stainless welding results with submerged arc welding

Job report courtesy of National Tank Mfg. Co., Los Angeles, Calif.

use ARCOSITE BONDED FLUX

This 4,000-gallon tank for a resin reactor will handle highly corrosive material at temperatures of 500° to 600°F. Stainless top and bottom heads of type 316L were submerged arc welded to the body with Arcosite Flux and Arcos Chromenar Stainless Wire. This combination gives the proper weld metal chemistry for the needed corrosion resistance and an economical solution to the problem. ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Penna.



strike talk and good business, picked up to about 87 pct of the industry's capacity. Brass mills leveled off after a brisk pickup. Nickel's '59 sales were predicted at 20 pct ahead of '58, when 320 million lb were consumed.

Steel company - USWA negotiations opened in New York with the union demanding a "substantial" wage increase, incorporation of the 17¢ cost-of-living increases achieved under the current contract and many fringes, including spreading of work, plus more insurance, unemployment and pensions.

"Mutual Assistance"—Exclusive IRON AGE article disclosed a steel industry "mutual assistance pact" similar to one used by airlines. As negotiations dragged on it became clear that both sides were miles apart. By month's end David McDonald, USWA president, was accusing management of "absolute refusal to bargain in good faith." The IRON AGE again predicted a strike.

In Washington, industry leaders asked an end to the Renegotiation Act, saying it discourages efficiency, rewards the inefficient, piles up paperwork, and discourages bidding by many reputable companies.

New Prices — Some steel warehouses instituted a new pricing system to more accurately reflect newly acquired knowledge on the cost of processing orders. Generally it meant larger discounts for larger quantities of single items, and vice versa.

The IRON AGE heavy melting steel scrap composite firmed by $2 a ton, closing the month at $35.83. Zinc and copper were unchanged; lead moved up ½¢ to 11.80; tin gained 1¢ to close at 103.5.

Space Monkeys—Two monkeys soared 300 miles into space in the nose of a Jupiter IRBM, returned for the usual press conference.

June

▪ In retrospect—due to the steel strike—June proved to be the peak industrial activity month of the year. The FRB Index hit a record 155; machine tool orders hit $65 million, just double the year-ago figure. Personal income peaked at $383.8 billion, gross national product at $484.5 billion.

The quarterly survey of metalworking's capital spending plans conducted for The IRON AGE by the National Industrial Conference Board showed appropriations doubled by most segments of metalworking, saw a boom in capital goods.

Imports Soar — But steel companies were growing acutely aware of the spectre of foreign competition, as imports continued to exceed

Continued on p. 326

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BETTER METAL FINISHES FOR YOUR PRODUCTS

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ROHCO 503 STILL OR BARREL ZINC BRIGHTENER (LIQUID) — produces jewel-like bright zinc deposits; ideal where one brightener is desired for all your bright zinc baths.

ROHCO 100 AND 100 SPECIAL BARREL BRIGHTENERS (LIQUID OR POWDER)—the most widely used of all barrel zinc brighteners; brilliant, bluish deposits directly from the plating tank.

ROHCO 175 BARREL BRIGHTENER (POWDER)—the newest addition to the ROHCO series; somewhat less brilliant deposits than with ROHCO 100 but at lower cost.

ROHCO 150 (POWDER) AND PERMA-BRITE B-150 (LIQUID) BARREL BRIGHTENERS—the most economical barrel brighteners on the market; for maximum brightness a bright dip is required.

PERMA-BRITE S-400 STILL BRIGHTENER (LIQUID) —somewhat less brightness than with ROHCO 503, at lower cost.

ROHCO ZW-600—wetting agent for cyanide zinc baths. Eliminates scum on the surface, lowers drag-out, and improves plating bath operation in both barrel and tank.

ROHCO ZINC-SOL — double strength, purified make-up or replenishment solution for instant bright plating.

ROHCO ZINC PURIFIER—to keep baths in tip-top shape for unfailing quality and appearance.

RODIPS—short-dip chromate treatments supplied as powders to brighten, passivate, and protect zinc plate for improved corrosion resistance and color retention. Receptive to subsequent absorption of dyes for color identification of parts.

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ROHCO 20XL and SUPER XL (LIQUID OR POWDER)—tops for producing the clearest, brightest barrel, or still cadmium; minimizes cadmium usage by improving uniformity and speed of deposit.

RODIP CD-3 and CD-4—single short-dip chromate post-plating treatment without leach for brilliant cadmium and good corrosion protection; CD-3 for automatic tank or barrel, CD-4 for manual operations.

CAD-SOL—a heavy solution of cadmium cyanide for easiest bath make-up or maintenance.

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ROHCO ANTI-SPRAY—produces foam blanket which eliminates chrome mist, safe for hard chrome baths.

ROHCO SUPER NO-CRO-MIST® — safeguards workers' health by eliminating chrome fumes, solves ventilating and heating problems; saves chromic acid.

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RODIP AL-44—additive for aluminum bright dips. Produces increased luster at lower temperature and suppresses acid fumes.

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ELECTRIC HULL CELL AGITATOR—new type oscillating variable-speed to reproduce tank operation.

ROHCO SAMPLING TUBE—unbreakable lucite. Designed for perfect sampling of plating baths without mess or fuss.

HANGING HULL CELL — the only available device for making Hull Cell plating tests under production conditions.

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exports, a trend started in December 1958. For the first six months exports were 1.4 million tons; imports 2.3 million tons.

In Washington, President Eisenhower told the Society of Business Magazine editors that the nation needed a sound dollar, noted that if in a time of prosperity "we can't pay off some of the Federal debt then our financing is going to have to be done under very unsatisfactory methods . . . there will be a further cheapening of our money." The consumer price index had moved up from the February-March low of 123.7 to 124 in May. By month's end it had hit 124.5.

Some Hope Seen—As the steel labor contract expiration date of June 30 approached it appeared at times that a strike could be averted at the last minute. The steel companies asserted that the union "offer" of about 15 to 16¢ per hr would cost them 20 to 22¢. They repeated their wage freeze "offer," coupled it with demands to wipe out some local practice featherbedding clauses that deprived management of the right to manage. As mills prepared to shut down, the White House won an extension in the strike deadline to July 14. Steelworkers were averaging $3.10 per hr.

Steelmaking scrap, which had opened the month at $37.17, moved up $1 during June. Copper, despite some strike fears, was steady.

July

- The Geneva Foreign Ministers Conference continued on dead center, Russia opened its exhibition in New York and Vice President Nixon flew to Moscow to open the U. S. exhibit there. Despite much talk, there was no progress in easing cold war tensions.

Steel mills, faced with strike uncertainties, and no contract, operated at 80 pct of capacity. Eisenhower asked for an indefinite extension of the steel contract; the Steelworkers declined. Wildcat strikes marked the first few days of July. On July 15, some 500,000 workers walked out of the mills, idling about 85 pct of the nation's steelmaking capacity. U. S. employment in mid-July was 67.6 million, an all-time record.

Aluminum Pact — At month's end, the USWA agreed with Alcoa, Kaiser and Reynolds to extend aluminum pacts for 30 days beyond a steel settlement.

The Association of American Railroads conditionally okayed aluminum freight cars; though more expensive, they carry five to eight tons more cargo.

Building Blocks—Major machine tool builders agreed to standardize on dimensions of some high production tools. The accord capped four years of effort by automakers to sell the "building block" concept.

Steel stocks, at 23 to 24 million tons, including a record 3.7 million tons in warehouses, looked pretty good as the strike started. Steel scrap prices moved up $1 for the month; copper dropped 1.5¢ to 30¢ per lb, despite lack of progress in copper labor talks.

August

- Employment other than steel was only slightly affected by the steel strike, but the Federal Reserve seasonally adjusted index dropped four points to 149 for the month. Congress gave the military a $39.2 billion budget for fiscal 1960.

Secretary Herter returned from Geneva saying that Russia's attitude made successful talks impossible. Vice President Nixon returned from Siberia saying that the Russian people want peace. Eisenhower announced he's invited Khrushchev for a visit; then flew to Paris, Bonn, London to lay the groundwork.

"Hands Off"—The President said he did not plan to intervene in the

Continued on p. 329

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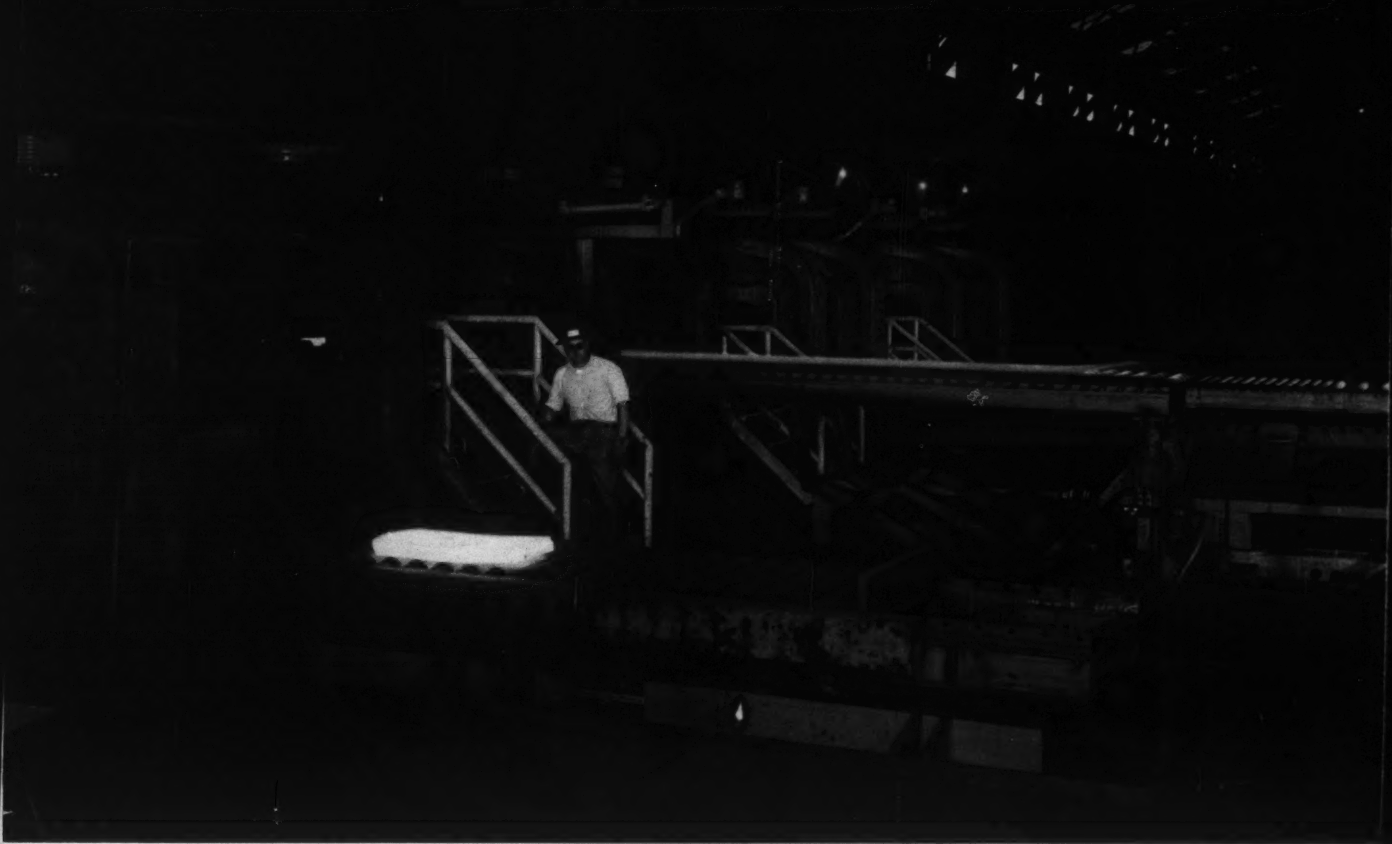

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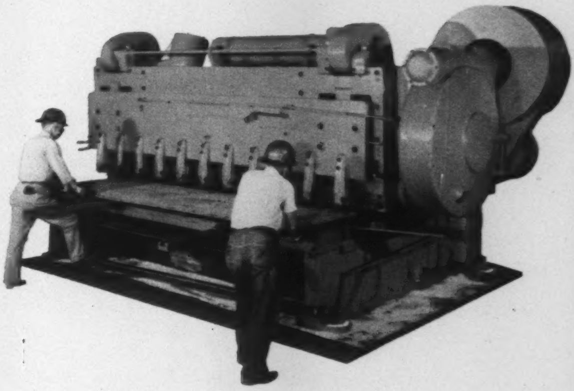
And that's the best reason of all why Ingersoll Steel is such a good name to know, a good place to go for the specialty steels you need. Try us—we think you'll agree.



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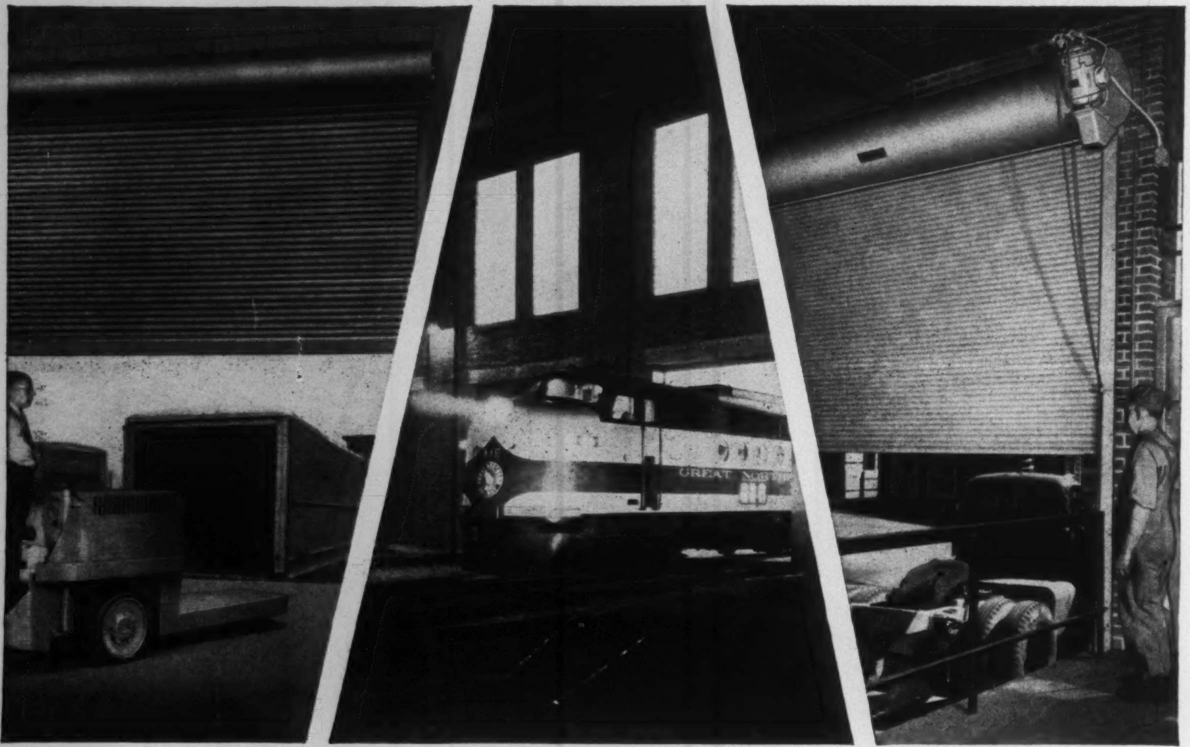

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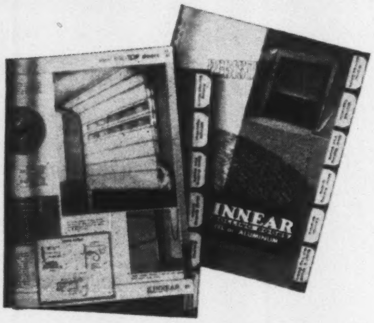

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steel strike unless it became a national emergency, quietly used the full power of his office to work out a settlement.

Secretary Mitchell laid the "facts" in the steel case before the public. Both sides asserted they supported their position. Record first-half steel earnings were thrown at steelmakers, who countered with the argument that customers had bought nine months' steel in six.

Roger M. Blough promised no steel price increase if a settlement were negotiated voluntarily.

Copper Struck—A strike of the Mine, Mill and Smelter Workers hit 75 pct of the U. S. copper industry. Copper users, with 30- to 60-day inventories seemed unconcerned. It also idled half of U. S. lead processing units; lead went up 1¢ per lb to 12.80¢. Copper and zinc were unchanged; steel scrap was a trifle higher.

September

- As the steel strike entered its seventh week, unemployment outside of basic steel began to grow; starting the month at 82,000, it passed 166,000 by Sept. 30. Though the FRB Index held steady at 149, Gross National Product for the third quarter fell nearly $6 billion below the second quarter level, and consumer prices set a new record high. The Federal debt passed $290 billion. Going the other way, steel stocks fell to 11 million tons, less than half the prestrike level.

Russia shot a rocket at the moon just as Premier Khrushchev was leaving for his U. S. tour. In a sense, it was more successful than he; the rocket traveled 230,000 miles and hit the moon. Mr. K did not take home the "increased trade" he sought.

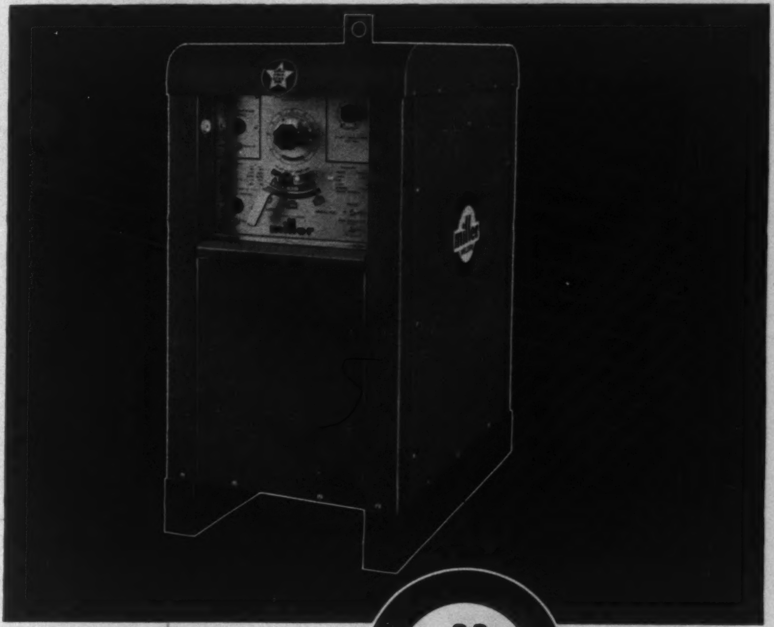
Oxygen Booms — The IRON AGE disclosed that nearly 7 million tons of new oxygen steelmaking capacity had either been contracted for or put up for bids during the previous few months, saw a possibility of the process topping 30-million ton capacity by 1965.

Congress put the heat on the White House to increase restrictions on lead, zinc and fluorspar imports to aid an ailing U. S. industry.

The White House continued to put the heat on steelmakers and the union but the steel strike continued, as did that in copper.

Labor Reform At Last—After months of debate coupled with threats from various segments of labor, Congress finally passed the first real labor reform bill since the Taft-Hartley Act of 1947. Signed by the President, it hit at racketeering, secondary boycotts and a host of abuses of dishonest unionism.

Steel imports for the month rose to 366,000 tons, bringing the 9-month total to 3 million tons. This was 1.3 million tons above the full year 1958.



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Tool Prices Cut—Major tungsten carbide producers cut some prices sharply. The IRON AGE steel scrap composite advanced $2 a ton to $43.17; copper moved up as much as 1½¢, and zinc advanced 1¢ per lb.

October

- The steel strike began to pinch. Although industrial activity dipped only two points to 147, unemployment due to the steel and copper strikes soared. Before the month ended, General Motors had laid off over 185,000; General Electric's Louisville appliance division sent 3000 home and Caterpillar Tractor furloughed 12,000.

U. S. unemployment passed 3.2 million, forcing Secretary Mitchell to eat his hat or a copy thereof in cake (see April).

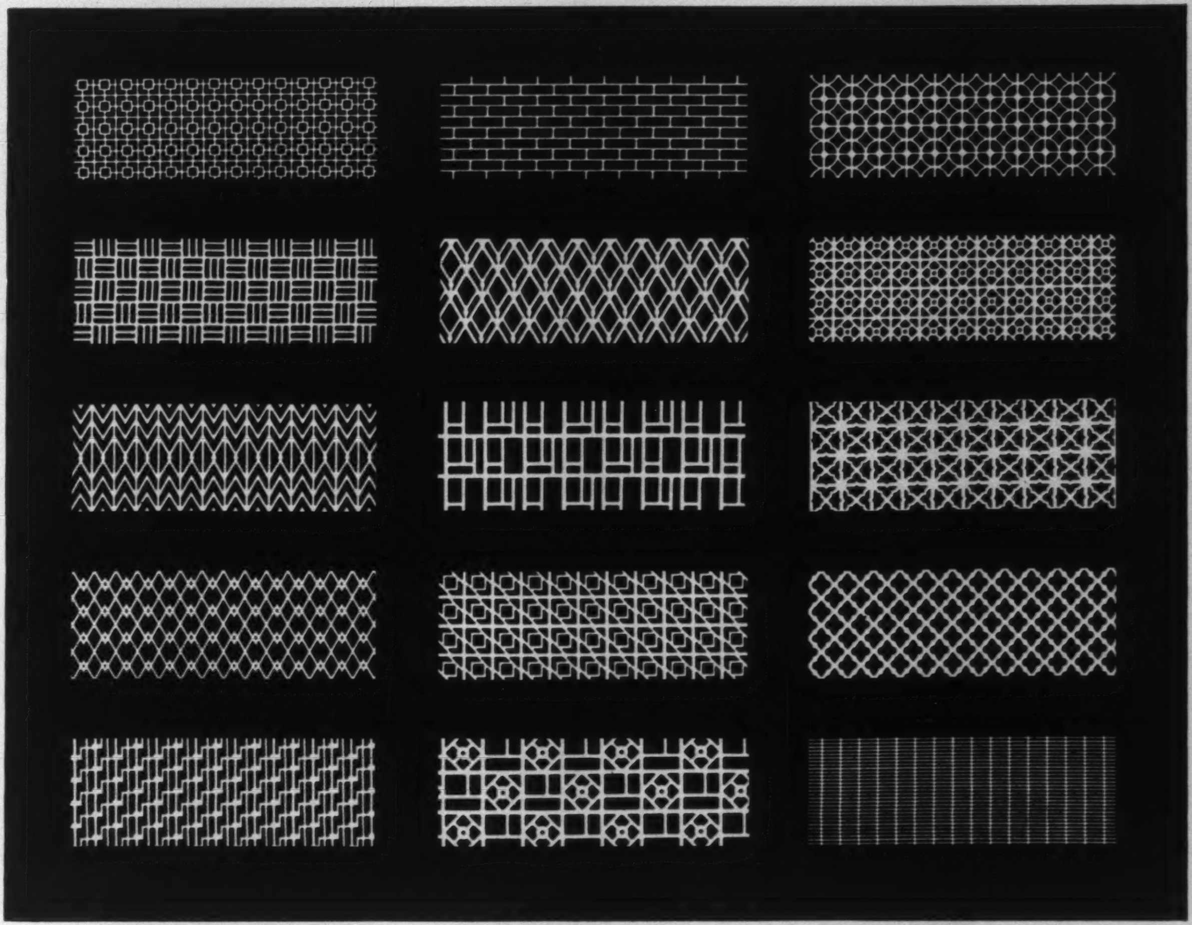
Sparked by Press Orders—Nevertheless, machine tool orders topped $67 million for the month, highest since March 1957.

Steel strike talks broke off despite a last-ditch Eisenhower appeal. On October 9 he invoked the Taft-Hartley Act by naming a three-man fact finding board. On Oct. 17 both sides rejected each other's "final" proposals. Two days later the President ordered the Justice Dept. to seek an 80-day back-to-work injunction.

Injunction Granted — Federal Judge H. P. Sorg issued the injunction in Pittsburgh on Oct. 21 but the union appealed and won a stay. On Oct. 26 Kaiser signed with the union followed by Detroit Steel and Granite City. Kaiser estimated its cost at 20¢ per hr over a 2-year period; other steelmakers figured cost to them would be about 32¢.

Chevrolet's Corvair was the first of the smaller cars, followed by Ford's Falcon and Chrysler's Valiant.

Reds Shoot Moon—The Soviet Union fired a rocket around the moon, photographing its far side,



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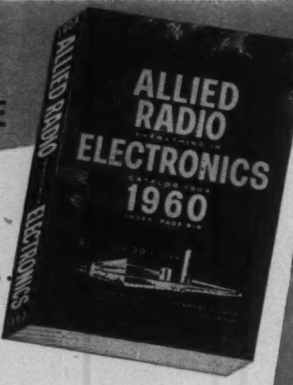

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then transmitting the photos as it returned to pass the earth.

General Electric scientists generated electricity by passing hot gases through a cold magnetic field; Allis Chalmers showed a tractor driven electrically by reacting fuel gases in an electrolyte in "fuel cells."

Scrap Moves Up — Steelmaking scrap gained $2.67, closing the month at $43.50; copper was unchanged; tin dropped 1½¢ to 101.50; zinc moved from 12¢ to 12.5-13¢.

November

▪ On Nov. 3 the U. S. Supreme Court heard arguments in the steel labor case. The USWA had appealed to the court on Oct. 30 and the latter left the Third Circuit court's stay order in effect. The Supreme Court found for the government on Nov. 7, upholding the Taft-Hartley injunction.

Quick Comeback—Workers, few grumbling, returned to the mills immediately. Within a week, steelmaking operations were at the 70 pct level and by the end of the month they reached 93 pct of capacity. The comeback was the fastest in history, surprising almost everyone in the industry itself. Good advance planning was credited; worker slowdowns, predicted in some circles, were not in evidence.

But finishing facilities did not come back as fast and pipelines were dry. By the second week of the month General Motors had idled 213,000. Ford was on short weeks and Chrysler's layoffs were near 6000. Later they rose to 23,400.

Detroit Feels It—Auto production for the month fell to 254,472 cars. It was the worst peacetime production month since October 1941.

Continued on p. 335

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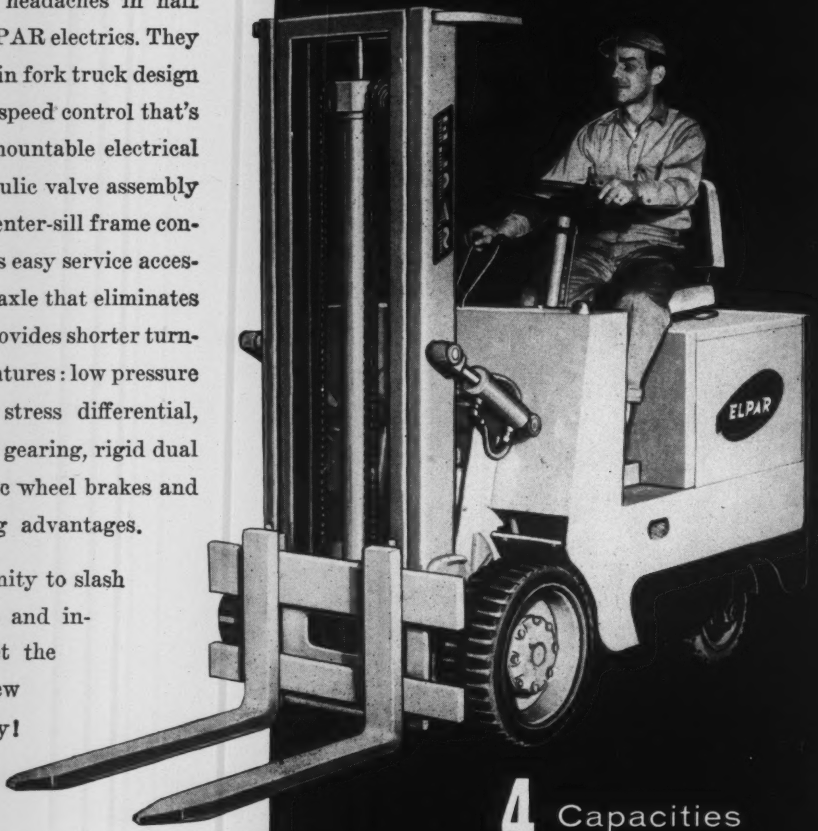

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Kennecott Copper Co. settled its USWA strike at a cost of 22.3¢ per hr over the next 20 months. By month's end Asarco and the Mine, Mill and Smelter workers had reached agreement on the basic principles of a new contract, with local contracts remaining to be signed. Cost: 22.4¢ over 20 months.

December

- The IRON AGE's quarterly survey showed there'd be a major advance in capital appropriations in 1960. It suggested that spending plans delayed by the steel strike would mean an even better 1960 for capital goods.

By the second week of December steel production reached 96.5 pct of capacity. The 2,732,000 tons poured set an all-time record. A week later General Motors had recalled all workers laid off for lack of steel.

Both American and Continental Can signed a three-year pact with USWA. It provides 7¢ per hr plus fringes each year. It's worth 28.2¢ to 30¢ over the period, according to company and union people, respectively. Up to 3¢ hourly cost of living boost is possible in the second and third years. Can prices will rise "slightly" on Jan. 15, 1960.

Copper moved up to a straight 33¢ following Kennecott's settlement with its USWA workers. Later, Mine, Mill and Smelter Workers ended their 4-month strike.

Prices Mixed—Steelmaking scrap and lead prices eased. Aluminium Ltd. raised ingot prices ¾¢ in other than U. S. markets. Alcoa raised pig prices 1.3¢ per lb to 26¢, the level prevailing in August 1957. Other U. S. companies followed.

Aluminum companies signed pacts with USWA worth 28.5 to 30¢ over three years, with '59 wages boosted 4.8 to 5.5¢ and a cost-of-living clause like that of the canmakers.

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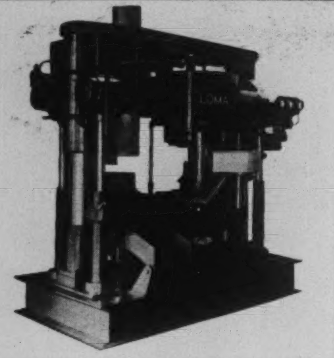
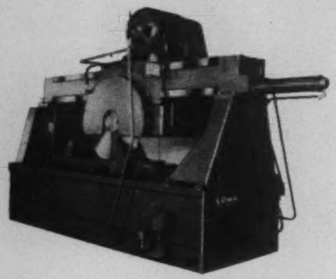
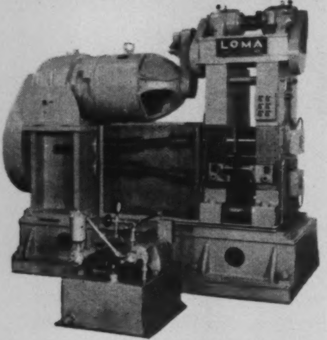


CONTINUOUS CASTING MACHINES



CIRCULAR SAWING MACHINES



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1960 Meetings And Conventions

Here's a rundown of the major meetings and conventions of trade associations and technical societies this year.

JANUARY

CUTTING TOOL MANUFACTURERS ASSN.—Annual meeting, Jan. 28, Harmonic Club, Detroit. Association headquarters are at 416 Penobscott Bldg., Detroit.

INDUSTRIAL HEATING EQUIPMENT ASSN., INC.—Annual winter meeting, Jan. 18-19, Warwick Hotel, Phila. Association headquarters are at 1145 - 19th St., N.W., Washington.

INSTITUTE OF SCRAP IRON & STEEL, INC.—32nd Annual convention, Jan. 10-13, Fontainebleau Hotel, Miami Beach, Fla. Institute headquarters are at 1729 "H" St., N.W., Washington.

MALLEABLE FOUNDERS SOCIETY—Semi-annual meeting, Jan. 15, Sheraton-Cleveland Hotel, Cleveland. Society headquarters are at 781 Union Commerce Bldg., Cleveland.

METAL LATH MANUFACTURERS ASSN.—Annual meeting, Jan. 27-28, Sheraton-Cleveland, Cleveland. Association headquarters are at Engineers Bldg., Cleveland.

PLUMBING BRASS INSTITUTE — Annual meeting, Jan. 25-27, Hollywood Beach Hotel, Hollywood, Fla. Institute headquarters are at One Gateway Center, Pittsburgh.

SOCIETY OF AUTOMOTIVE ENGINEERS, INC.—Annual meeting, Jan. 12-16, The Sheraton-Cadillac and Statler Hotels, Detroit. Society headquarters are at 485 Lexington Ave., New York.

SOCIETY OF PLASTICS ENGINEERS, INC. — Annual technical conference, Jan. 12-15, Conrad Hilton, Chicago. Society headquarters are at 65 Prospect St., Stamford.

STEEL KITCHEN CABINET MANUFACTURERS ASSN.—Winter meeting, Jan. 19, Sheraton Tower Hotel, Chicago. Association headquarters are at 812 Engineers Bldg., Cleveland.

STEEL PLATE FABRICATORS ASSN.—Annual meeting, Jan. 21-22, Roosevelt Hotel, New Orleans, La. Association headquarters are at 105 W. Madison St., Chicago.

STEEL SHIPPING CONTAINER INST., INC.—Winter meeting, Jan. 19-20, St. Regis Hotel, New York. Institute headquarters are at 600 Fifth Ave., New York.

TRUCK TRAILER MANUFACTURERS ASSN.—19th Annual convention, Jan. 24-27, Hotel del Coronado, Coronado, Calif. Association headquarters are at 710 Albee Bldg., Washington.

FEBRUARY

ALLOY CASTING INSTITUTE — Midwinter management meeting, Feb. 4-5, Key Biscayne Hotel, Key Biscayne, Fla. Institute headquarters are at 1001 Franklin Ave., Garden City.

AMERICAN COKE & COAL CHEMICALS INSTITUTE—Western regional meeting, Feb. 4, The Drake Hotel, Chicago. Institute headquarters are at 711 Fourteenth St., N.W., Washington.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS—National meeting, Feb. 21-24, Biltmore Hotel, Atlanta. Institute headquarters are at 25 W. 45th St., New York.

AMERICAN SOCIETY FOR TESTING MATERIALS — Committee week, Feb. 1-5, Sherman Hotel, Chicago. Society headquarters are at 1916 Race St., Phila.

INDUSTRIAL DIAMOND ASSN. OF AMERICA, INC.—Annual meeting and convention, Feb. 22 - 25, Hollywood Beach Hotel, Hollywood Beach, Fla. Association headquarters are at Box 175, Pompton Plains, N. J.

THE METALLURGICAL SOCIETY OF AIME — Annual meeting, Feb. 14-18, Hotel Statler Hilton & Sheraton-Atlantic Hotel, New York. Society headquarters are at 29 W. 39th St., New York.

SOCIETY FOR NON - DESTRUCTIVE TESTING — Symposium on Aircraft Components, Feb. 16-17-18, San Antonio, Texas. Society headquarters are at 1109 Hinman St., Evanston.

MARCH

ALUMINUM EXTRUDERS COUNCIL—Quarterly meeting, Mar. 9-11, Arawak Hotel, Jamaica, W. I. Council headquarters are at 1015 Chestnut St., Phila.

ASSOCIATION OF IRON AND STEEL ENGINEERS—Western meeting, Mar. 7-8-9, St. Francis Hotel, San Francisco. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

ASSN. OF LIFT TRUCK & PORTABLE ELEVATOR MANUFACTURERS — Spring membership meeting, Mar. 28, Pittsburgh-Hilton, Pittsburgh. Association headquarters are at One Gateway Center, Pittsburgh.

ASSN. OF LIFT TRUCK & PORTABLE ELEVATOR MANUFACTURERS—Fall meeting, Sept. 12, Cavalier Club, Virginia Beach, Va. Association headquarters are at One Gateway Center, Pittsburgh.

CAN MANUFACTURERS INSTITUTE, INC.—Annual meeting, Mar. 7, Waldorf-Astoria Hotel, New York. Institute headquarters are at 821 - 15th St., N.W., Washington.

ELECTRONIC INDUSTRIES ASSN.—Spring conference, Mar. 16-17-18, Statler Hilton Hotel, Washington. Association headquarters are at 1721 DeSales St., N.W., Washington.

FIRE EQUIPMENT MANUFACTURERS ASSN. — Annual meeting, Mar. 15-16, Barbizon-Plaza Hotel, New York. Association headquarters are at 759 One Gateway Center, Pittsburgh.

GAS APPLIANCE MANUFACTURERS ASSN., INC.—Annual meeting, Mar. 30-31-Apr. 1, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 60 E. 42nd St., New York.

HOIST MANUFACTURERS ASSN.—Annual meeting, Mar. 1, Hotel Cleveland, Cleveland. Association headquarters are at One Thomas Circle, Washington.

MEETINGS

THE INDUSTRIAL TRUCK ASSN.—Spring meeting, Mar. 28-30, Pittsburgh-Hilton Hotel, Pittsburgh. Association headquarters are at One Gateway Center, Pittsburgh.

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY—Annual meeting, Mar. 8-9-10, The Barbizon-Plaza Hotel, New York. Society headquarters are at 420 Lexington Ave., New York.

THE MATERIAL HANDLING INSTITUTE, INC.—Spring meeting, Mar. 28-30, Pittsburgh-Hilton Hotel, Pittsburgh. Institute headquarters are at One Gateway Center, Pittsburgh.

MONORAIL MANUFACTURERS ASSN.—Spring meeting, Mar. 28-30, Pittsburgh-Hilton Hotel, Pittsburgh. Association headquarters are at 71 West 35th St., New York.

NATIONAL ASSOCIATION OF CORROSION ENGINEERS—16th Annual conference & Corrosion Show, Mar. 14-18, Memorial Auditorium, Dallas. Association headquarters are at 1061 M & M Bldg., Houston.

NATIONAL ASSN. OF WASTE MATERIAL DEALERS, INC.—47th Annual convention, Mar. 13-15, Waldorf-Astoria Hotel, N. Y. Association headquarters are at 271 Madison Ave., N. Y.

PRESSED METAL INSTITUTE—Spring technical meeting, Mar. 23-24-25, The Pick-Carter Hotel, Cleveland. Institute headquarters are at 3673 Lee Rd., Cleveland.

SCALE MANUFACTURERS ASSN., INC.—Spring meeting, Mar. 22-23, Washington. Association headquarters are at 1 Thomas Circle, Washington.

SCIENTIFIC APPARATUS MAKERS ASSN.—Annual meeting, Mar. 27-31, Boca Raton Hotel & Club, Boca Raton, Fla. Association headquarters are at 20 North Wacker Drive, Chicago.

SOCIETY FOR NON-DESTRUCTIVE TESTING—Third International Conference, Mar. 15-21, Tokyo, Japan. Society headquarters are at 1109 Hinman St., Evanston.

APRIL

AMERICAN HOME LAUNDRY MANUFACTURERS' ASSN.—Annual convention, Apr. 27-30, Diplomat Hotel, Hollywood by-the Sea, Fla. Association headquarters are at 20 N. Wacker Drive, Chicago.

AMERICAN MACHINE TOOL DISTRIBUTORS ASSN.—Spring meeting, Apr. 18-19-20, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are 1500 Massachusetts Ave., N.W., Washington.

AMERICAN SOCIETY OF LUBRICATION ENGINEERS—Annual meeting, Apr. 19-20-21, Netherland-Hilton, Cincinnati. Society headquarters are at 5 North Wabash Ave., Chicago.

AMERICAN SOCIETY OF TOOL ENGINEERS—Tool show and annual convention, Apr. 21-28, Detroit. Society headquarters are at 10700 Puritan Ave., Detroit.

AMERICAN WELDING SOCIETY—Spring meeting, Apr. 25-29, Los Angeles. Society headquarters are at 33 W. 39th St., New York.

AMERICAN ZINC INSTITUTE, INC.—Annual meeting, Apr. 7-8, Chase-Park Plaza Hotel, St. Louis, Mo. Institute headquarters are at 60 E. 42nd St., New York.

ASSN. OF IRON AND STEEL ENGINEERS—Spring meeting, Apr. 25-26-27, Sheraton Hotel, Phila. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

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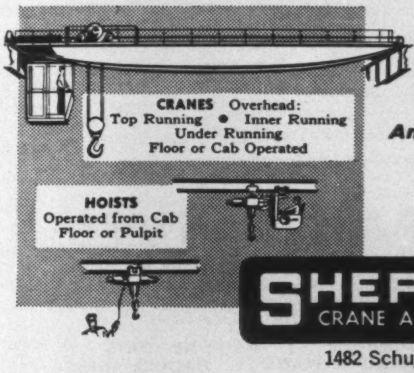

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MEETINGS

LEAD INDUSTRIES ASSN. & AMERICAN ZINC INSTITUTE—Joint annual meeting, Apr. 6-8, Park Plaza Hotel, St. Louis. Association and Institute headquarters are located at 60 E. 42nd St., New York.

THE METALLURGICAL SOCIETY OF AIME—Nuclear Congress, Apr. 3-8, The Coliseum, New York. Society headquarters are at 29 W. 39th St., New York.

THE METALLURGICAL SOCIETY OF AIME—National Open Hearth Steel Conference & Blast Furnace, Coke Oven, & Raw Material Conference, Apr. 4-6, Palmer House, Chicago. Society headquarters are at 29 W. 39th St., New York.

METAL LATH MANUFACTURERS ASSN.—Spring meeting, Apr. 28-29, Hotel Tropicana, Las Vegas, Nev. Association headquarters are at Engineers Bldg., Cleveland.

METAL POWDER INDUSTRIES FEDERATION—Powder Metallurgy Show, Apr. 25-26-27, Drake Hotel, Chicago. Headquarters are at 60 E. 42nd St., New York.

METAL POWDER INDUSTRIES FEDERATION—16th Annual meeting, Apr. 25-26-27, Drake Hotel, Chicago. Headquarters are at 60 E. 42nd St., New York.

NATIONAL ASSN. OF SHEET METAL DISTRIBUTORS—Spring meeting, Apr. 20-22, Deshler Hilton Hotel, Columbus. Association headquarters are at 1900 Arch St., Phila.

NATIONAL METAL TRADES ASSN.—New England Congress meeting, Apr. 5, Sheraton-Plaza Hotel, Boston. Association headquarters are at 337 W. Madison St., Chicago.

RAIL STEEL BAR ASSN.—Annual meeting, Apr. 20-21-22, Palm Beach Biltmore Hotel, Palm Beach, Fla. Association headquarters are at 38 South Dearborn St., Chicago.

STEEL SHIPPING CONTAINERS INST., INC.—Annual meeting, Apr. 12-14, The Breakers, Palm Beach, Fla. Institute headquarters are at 600 Fifth Ave., New York.

MAY

AIRCRAFT INDUSTRIES ASSN. OF AMERICA—Spring meeting, Board of Governors, May 18-20, Williamsburg, Va. Association headquarters are 610 Shoreham Bldg., Washington.

ALUMINUM WARES ASSN.—Annual meeting, May 23-24, Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at First National Bank Bldg., Pittsburgh.

AMERICAN COKE & COAL CHEMICALS INSTITUTE—Eastern regional meeting, May 16-17, The Westchester Country Club, Rye, N. Y. Institute headquarters are at 711 Fourteenth St., N.W., Washington.

AMERICAN FOUNDRYMEN'S SOCIETY—National Castings Congress & Exposition, May 9-13, Convention Hall, Phila. Society headquarters are at Golf and Wolf Rds., Des Plains, Ill.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.—Engineering conference, May 5-6, Brown Palace Hotel, Denver. Institute headquarters are at 101 Park Ave., New York.

AMERICAN IRON AND STEEL INSTITUTE—General meeting, May 25-26, Waldorf-Astoria Hotel, New York. Institute headquarters are at 150 East 42nd St., New York.

AMERICAN MINING CONGRESS—Coal convention, May 9-11, Pittsburgh. Headquarters are at 1200 - 18th St., N.W., Washington.

AMERICAN SOCIETY FOR METALS—Southwestern Metal Exposition & Congress, May 9-13, State Fair Park, Dallas. Society headquarters are at Metals Park, Novelty, O.

AMERICAN STEEL WAREHOUSE ASSN., INC.—Annual meeting, May 15-16-17-18, The Fontainebleau Hotel, Miami Beach, Fla. Association headquarters are at 540 Terminal Tower, Cleveland.

AMERICAN SUPPLY & MACHINERY MFRS. ASSN., INC.—Triple industrial supply convention, May 23-24-25, Chicago. Association headquarters are at 2130 Keith Bldg., Cleveland.

THE ANTI-FRICTION BEARING MANUFACTURERS ASSN., INC.—Annual meeting, May 11-12-13, Westchester Country Club, Rye, N. Y. Association headquarters are at 60 East 42nd St., New York.

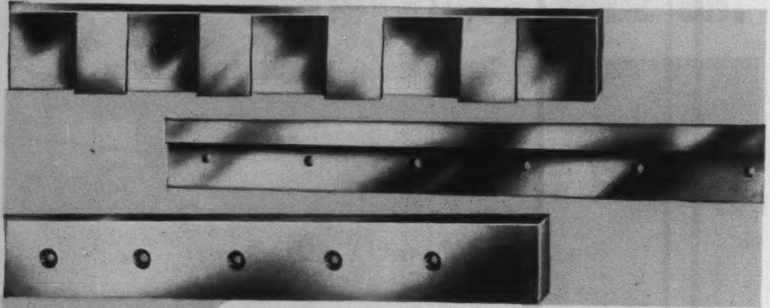
CONCRETE REINFORCING STEEL INSTITUTE—Annual meeting, May 30-June 4, Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 38 S. Dearborn St., Chicago.

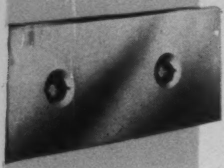
COPPER & BRASS RESEARCH ASSN.—Annual meeting, May 15-18, The Homestead, Hot Springs, Va. Association headquarters are at 420 Lexington Ave., New York.

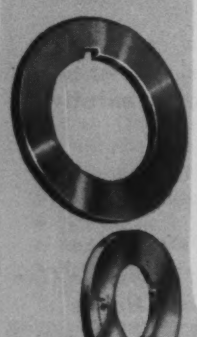
THE ELECTROCHEMICAL SOCIETY, INC.—Spring national meeting, May 1-2-3-4-5, LaSalle Hotel, Chicago. Society headquarters are at 1860 Broadway, New York.

ELECTRONIC INDUSTRIES ASSN.—Annual convention (36th) May 18-19-20, The Pick-Congress, Chicago. Association headquarters are at 1721 De-Sales St., N.W., Washington.

INDUSTRIAL HEATING EQUIPMENT ASSN., INC.—Annual spring meeting,







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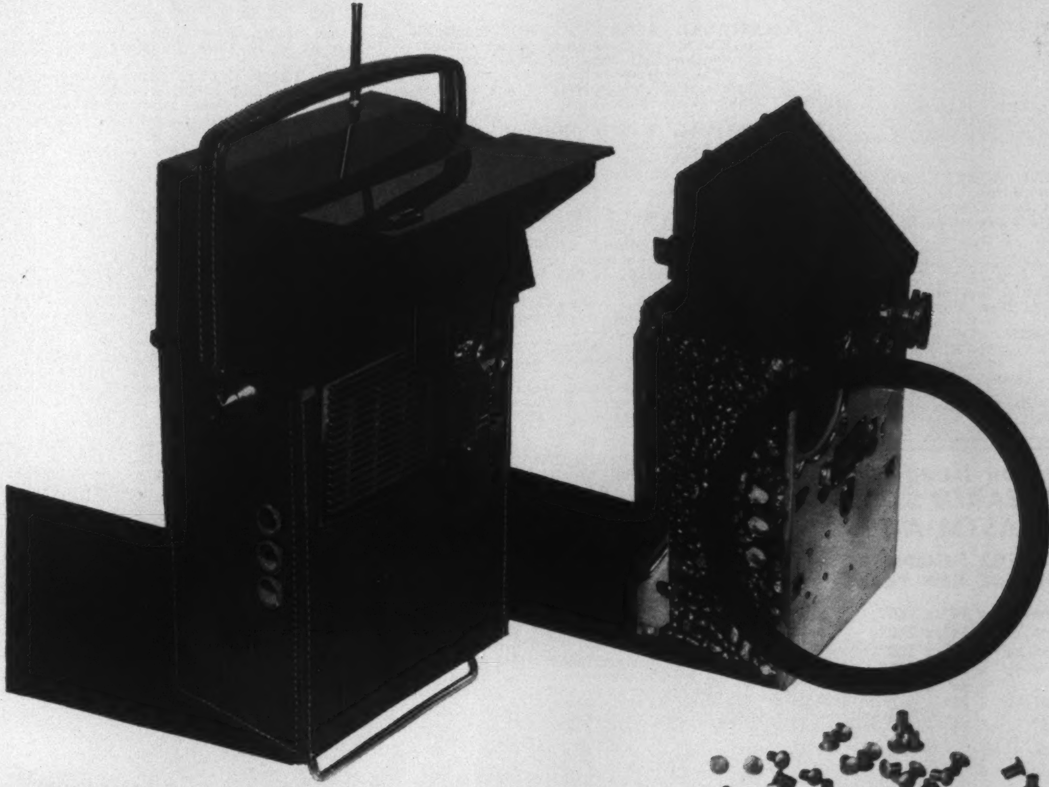

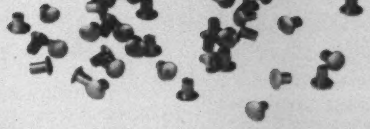

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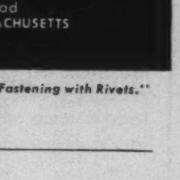

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MEETINGS

May 22-25, The Homestead, Hot Springs, Va. Association headquarters are at 1145 - 19th St., N.W., Washington.

INTERNATIONAL ACETYLENE ASSN.—Annual convention, May 9-10, St. Francis Hotel, San Francisco. Association headquarters are at 30 E. 42nd St., New York.

MAGNESIUM ASSN.—Annual membership meeting, May 23-27, London, England. Association headquarters are at 122 E. 42nd St., New York.

NATIONAL ASSN. OF ARCHITECTURAL METAL MANUFACTURERS—22nd Annual convention, May 1-7, Boca Raton Hotel and Club, Boca Raton, Fla. Association headquarters are at 228 North LaSalle St., Chicago.

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NATIONAL ASSN. OF PURCHASING AGENTS—45th Annual international convention and inform-a-show, May 22-25, The Biltmore Hotel, Los Angeles. Association headquarters are at 11 Park Place, New York.

NATIONAL FLUID POWER ASSN.—Spring meeting, May 8-12, Grand Hotel, Point Clear, Ala. Association headquarters are at 5595 N. Hollywood Ave., Milwaukee.

NATIONAL MACHINE TOOL BUILDERS ASSN.—58th Spring meeting, May 5-6, The Roosevelt Hotel, New York. Association headquarters are at 2139 Wisconsin Ave., N.W., Washington.

SOCIETY FOR NON-DESTRUCTIVE TESTING—2nd Southwest Regional Convention, May 9-11, The Baker Hotel, Dallas, Texas. Society headquarters are at 1109 Hinman St., Evanston.

WIRE ASSN.—Regional meeting, May 4-5, Sheraton Hotel, Phila. Association headquarters are at 453 Main St., Stamford, Conn.

WIRE REINFORCEMENT INSTITUTE—Annual spring meeting, May 30-31, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at National Press Bldg., Washington.

JUNE

ALLOY CASTING INSTITUTE—Annual meeting, June 19-21, The Homestead, Hot Springs, Va. Institute headquarters are at 1001 Franklin Ave., Garden City.

AMERICAN GEAR MANUFACTURERS ASSN.—44th Annual meeting, June 6-7-8, The Homestead, Hot Springs, Va. Association headquarters are at One Thomas Circle, Washington.

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS — Semi-annual meeting, June 5-9, Statler Hilton, Dallas. Society headquarters are at 29 West 39th St., New York.

AMERICAN SOCIETY FOR TESTING MATERIALS—Annual meeting & apparatus exhibit, June 26-July 1, Chalfonte-Haddon Hall, Atlantic City. Society headquarters are at 1916 Race St., Phila.

THE ASSN. OF AMERICAN BATTERY MANUFACTURERS, INC. — Spring convention, June 1-2-3, The Ambassador Hotel, Los Angeles. Association headquarters are at 19 N. Harrison St., East Orange, N. J.

DROP FORGING ASSN.—Annual meeting of members, June 26-29, Seigniory Club, Canada. Association headquarters are at 1121 Illuminating Bldg., Cleveland.

EDISON ELECTRIC INSTITUTE—Annual convention, June 6-8, Atlantic City. Institute headquarters are at 420 Lexington Ave., New York.

INDUSTRIAL SAFETY EQUIPMENT ASSN., INC.—Annual meeting, June 21-22-23-24, Sedgefield Inn, Greensboro, N. C. Association headquarters are at 420 Lexington Ave., New York.

THE INDUSTRIAL WIRE CLOTH INSTITUTE — Annual resort meeting, June 3-7, Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 630 Third Ave., New York.

INSTITUTE OF APPLIANCE MANUFACTURERS, 28th Annual convention, June 6-9, Netherland-Hilton, Cincinnati. Institute headquarters are at Shoreham Hotel, Washington.

MALLEABLE FOUNDERS SOCIETY—Annual meeting, June 6-8, Elbow Beach Surf Club, Hamilton, Bermuda. Society headquarters are at 781 Union Commerce Bldg., Cleveland.

THE MATERIAL HANDLING INSTITUTE, INC.—New England Show, June 6-8, Commonwealth Armory, Boston. Institute headquarters are at One Gateway Center, Pittsburgh.

METAL POWDER INDUSTRIES FEDERATION—International Powder Metallurgy conference, June 13-14-15, Biltmore Hotel, New York. Headquarters are at 60 E. 42nd St., New York.

STEEL TANK INSTITUTE—Semi-annual meeting, June 23-24, Broadmoor, Colorado Springs, Colo. Institute headquarters are at 120 S. LaSalle St., Chicago.

WIRE ASSN.—Regional meeting, June 7-8, Statler Hotel, Los Angeles. Association headquarters are at 453 Main St., Stamford, Conn.

JULY

AMERICAN ELECTROPLATERS' SOCIETY—47th annual convention, July 24-28, Statler Hotel, Los Angeles. Society headquarters are at 445 Broad St., Newark, N. J.

CAST IRON PIPE RESEARCH ASSN.—Annual meeting, July 13-14, The Seaview Country Club, Absecon, N. J. Association headquarters are at Prudential Plaza, Suite 3440, Chicago.

METAL LATH MANUFACTURERS ASSN.—Summer meeting, July 20-21, Carlton House, Pittsburgh. Association headquarters are at Engineers Bldg., Cleveland.

TRUCK TRAILER MANUFACTURERS ASSN.—12th Annual summer meeting, July 10-13, The Homestead, Hot Springs, Va. Association headquarters are at 710 Albee Bldg., Washington.

SEPTEMBER

AMERICAN DIE CASTING INSTITUTE—Annual meeting, Sept. 14-15-16, Edgewater Beach Hotel, Chicago. Institute headquarters are at 366 Madison Ave., New York.

AMERICAN MACHINE TOOL DISTRIBUTORS ASSN.—Annual meeting, Sept. 3-4, LaSalle Hotel, Chicago. Association headquarters are at 1500 Massachusetts Ave., N.W., Washington.

AMERICAN WELDING SOCIETY—Fall meeting, Sept. 26-30, Pittsburgh. Society headquarters are at 33 W. 39th St., New York.

ASSN. OF IRON AND STEEL ENGINEERS — Convention & Exposition, Sept. 27-28-29-30, Cleveland Public Auditorium, Cleveland. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

ASSN. OF LIFT TRUCK & PORTABLE ELEVATOR MANUFACTURERS—Fall meeting, Sept. 12, The Cavalier Club, Virginia Beach, Va. Association headquarters are at One Gateway Center, Pittsburgh.

ELECTRONIC INDUSTRIES ASSN.—Fall conference, Sept. 13-14-15-16, French Lick-Sheraton, French Lick, Ind. Association headquarters are at 1721 DeSales St., N.W., Washington.

FARM EQUIPMENT INSTITUTE—Annual convention, Sept. 25-28, The Statler Hilton Hotel, Dallas, Texas. Institute headquarters are at 608 S. Dearborn St., Chicago.

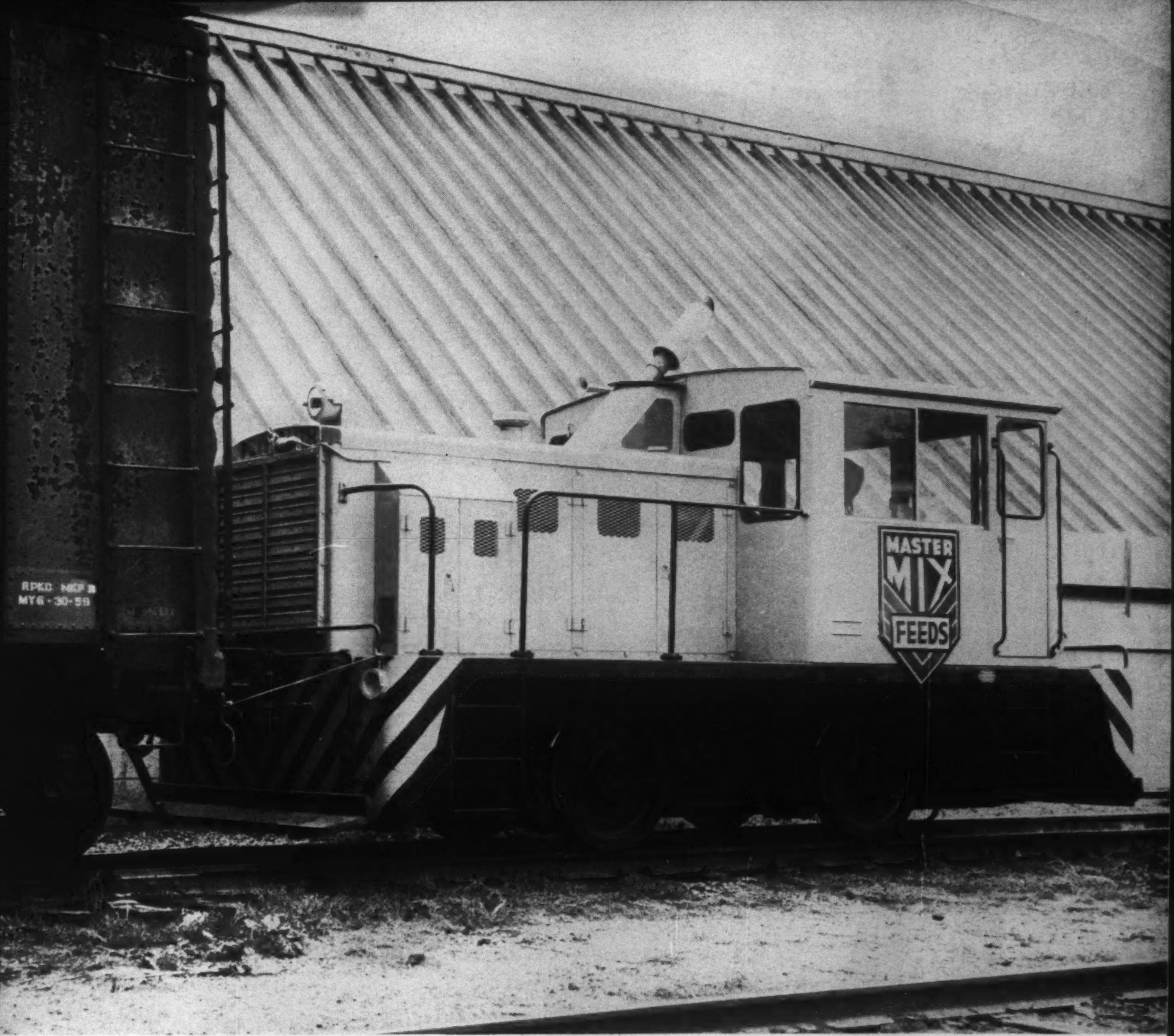
NATIONAL FOUNDRY ASSN. — 62nd Annual meeting, Sept. 22-23, Edgewater Beach Hotel, Chicago. Association headquarters are at 53 W. Jackson Blvd., Chicago.

PORCELAIN ENAMEL INSTITUTE, INC.—Annual meeting, Sept. 25-28, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 1145 - 19th St., N.W., Washington.

OCTOBER

AMERICAN COKE & COAL CHEMICALS INSTITUTE—Annual meeting, Oct. 17-18, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 711 Fourteenth St., N.W., Washington.

AMERICAN GAS ASSN.—Annual convention, Oct. 10-12, Atlantic City. Association headquarters are at 420 Lexington Ave., New York.



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MEETINGS

AMERICAN GEAR MANUFACTURERS ASSN.—Semi-annual meeting, Oct. 24-25-26, Edgewater Beach Hotel, Chicago. Association headquarters are at One Thomas Circle, Washington.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.—Annual convention, Oct. 31-Nov. 3, Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 101 Park Ave., New York.

AMERICAN MINING CONGRESS—Mining Show, Oct. 10-13, Convention Center, Las Vegas, Nev. Headquarters are at 1200 18th St., N.W., Washington.

AMERICAN SOCIETY FOR METALS—National Metal Exposition & Congress, Oct. 17-21, Phila. Convention Hall, Phila. Society headquarters are at Metals Park, Novelty, O.

AMERICAN STANDARDS ASSN., INC.—11th National conference on standards, Oct. 25-26-27, Sheraton-McAlpin Hotel, New York. Association headquarters are at 70 East 45th St., New York.

CONVEYOR EQUIPMENT MANUFACTURERS ASSN.—Annual meeting, Oct. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at No. 1 Thomas Circle, Washington.

THE ELECTROCHEMICAL SOCIETY, INC.—Fall national meeting, Oct. 9-10-11-12-13, Shamrock Hotel, Houston, Tex. Society headquarters are at 1860 Broadway, New York.

FOUNDRY EQUIPMENT MANUFACTURERS ASSN., INC.—42nd Annual meeting, Oct. 20-21-22, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at One Thomas Circle, Washington.

GRAY IRON FOUNDERS' SOCIETY, INC.—Annual meeting, Oct. 12-14, Netherland Hilton Hotel, Cincinnati. Society headquarters are at 930 National City-E. 6th Bldg., Cleveland.

MAGNESIUM ASSN.—16th Annual convention, Oct. 17-18, Cleveland. Association headquarters are at 122 E. 42nd St., New York.

NATIONAL FLUID POWER ASSN.—Fall meeting, Oct. 30-Nov. 2, The Edgewater Beach Hotel, Chicago. Association headquarters are at 5595 N. Hollywood Ave., Milwaukee.

NATIONAL TOOL & DIE MANUFACTURERS ASSN.—Annual convention, Oct. 19-23, Leamington Hotel, Minneapolis. Association headquarters are at 907 Public Square Bldg., Cleveland.

PRESSED METAL INSTITUTE—Annual meeting, Oct. 10-14, Shawnee Inn, Shawnee-On-Delaware, Pa. Institute headquarters are at 3673 Lee Rd., Cleveland.

SOCIETY FOR NON - DESTRUCTIVE TESTING—20th Annual convention, Oct. 17-21, Phila., Pa. Society headquarters are at 1109 Hinman St., Evanston.

NOVEMBER

AIRCRAFT INDUSTRIES ASSN. OF AMERICA—Fall meeting, Members & Board of Governors, Nov. 16-18, Phoenix, Ariz. Association headquarters are at 610 Shoreham Bldg., Washington.

AMERICAN MINING CONGRESS—Coal Div. Conference, Nov. 18, Penn-Sheraton Hotel, Pittsburgh. Headquarters are at 1200 18th St., N.W., Washington.

AMERICAN SOCIETY OF TOOL ENGINEERS—Western tool show and semi-annual convention, Nov. 14-18, Los Angeles. Society headquarters are at 10700 Puritan Ave., Detroit.

ELECTRONIC INDUSTRIES ASSN. — Winter conference, Nov. 29-30-Dec. 1, Fairmont Hotel, San Francisco. Association headquarters are at 1721 De Sales St., N.W., Washington.

NATIONAL ELECTRICAL MANUFACTURERS ASSN.—Annual convention, Nov. 14-17, Hotel Traymore, Atlantic City. Association headquarters are at 155 E. 44th St., New York.

NATIONAL MACHINE TOOL BUILDERS ASSN.—59th Annual meeting, Nov. 2-4, The Homestead, Hot Springs, Va. Association headquarters are at 2139 Wisconsin Ave., N.W., Washington.

PORCELAIN ENAMEL INSTITUTE, INC.—Shop Practice Forum, Nov. 2-3-4, University of Illinois, Urbana, Ill. Institute headquarters are at 1145 19th St., N.W., Washington.

WIRE ASSN.—Annual convention, Nov. 14-17, LaSalle Hotel, Chicago. Association headquarters are at 453 Main St., Stamford, Conn.

DECEMBER

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS—Annual meeting, Dec. 4-7, Statler Hotel, Washington. Institute headquarters are at 25 W. 45th St., New York.

AMERICAN MINING CONGRESS—Annual membership meeting, Dec. 5, Plaza Hotel, New York. Headquarters are at 1200 18th St., N.W., Washington.

THE METALLURGICAL SOCIETY OF AIME—Electric Furnace Conference, Dec. 2, Morrison Hotel, Chicago. Society headquarters are at 29 W. 39th St., New York.

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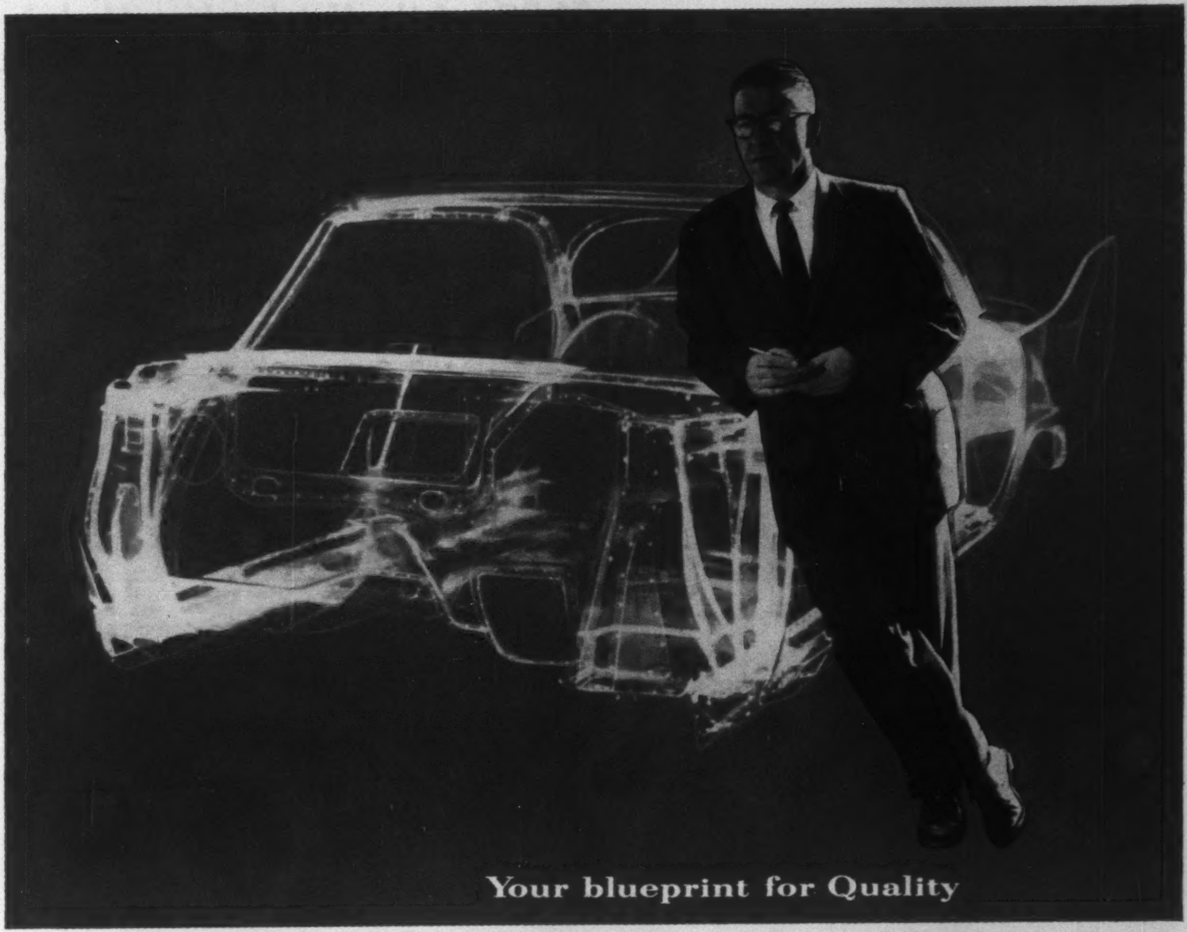

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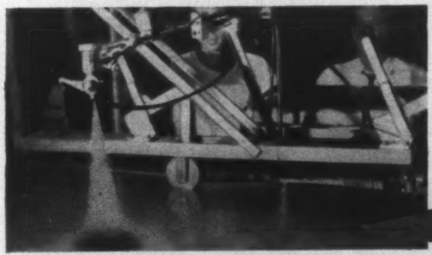

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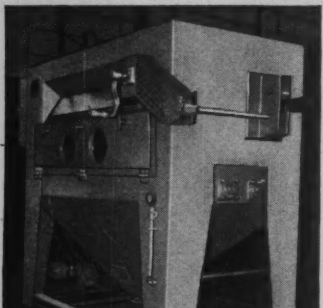

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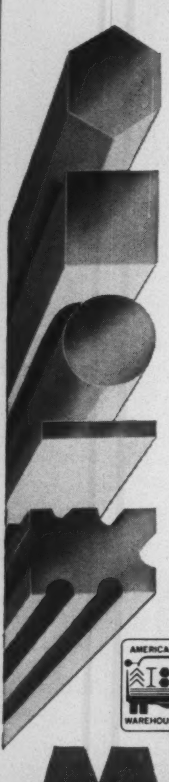

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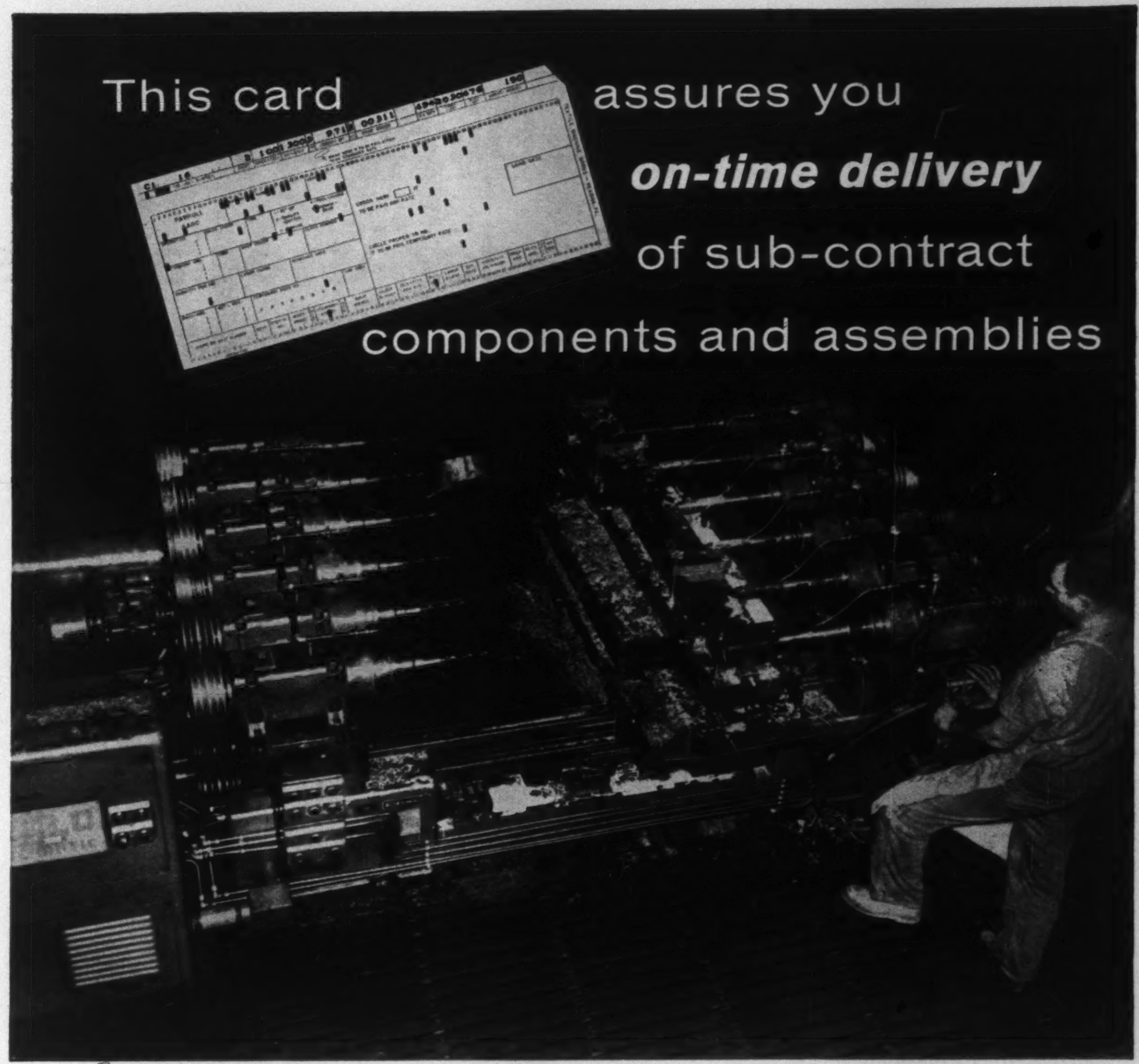

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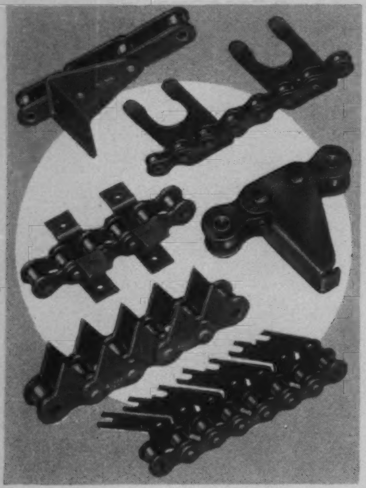

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1960 Directory Of Trade Associations

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It includes headquarters addresses and names of society officers.

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Secy.: Carl H. Burton

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American Die Casting Institute
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Secy.: David Laine

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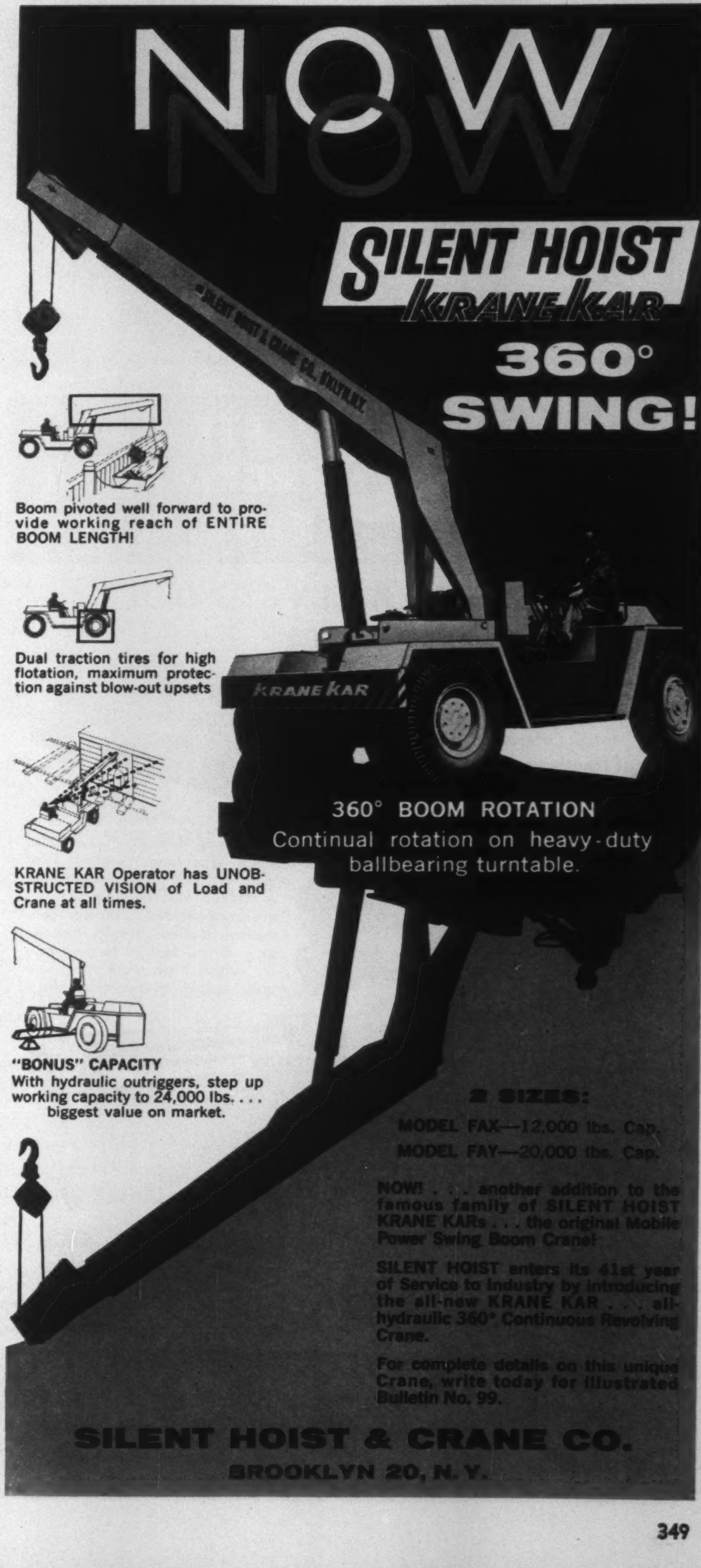

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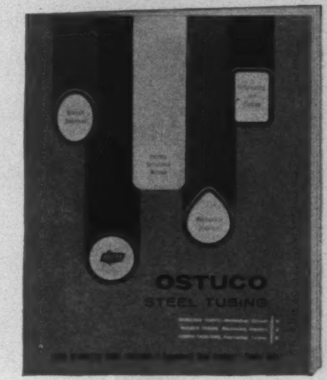
A-1282A

Scale model illustrated built to 3.5 mm scale.



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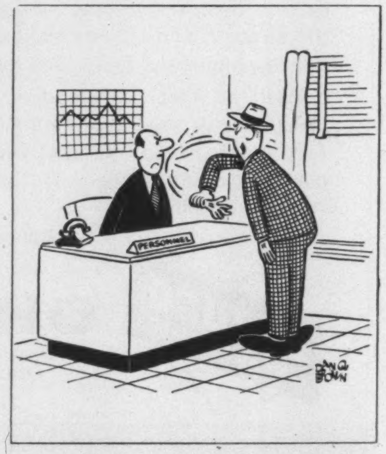

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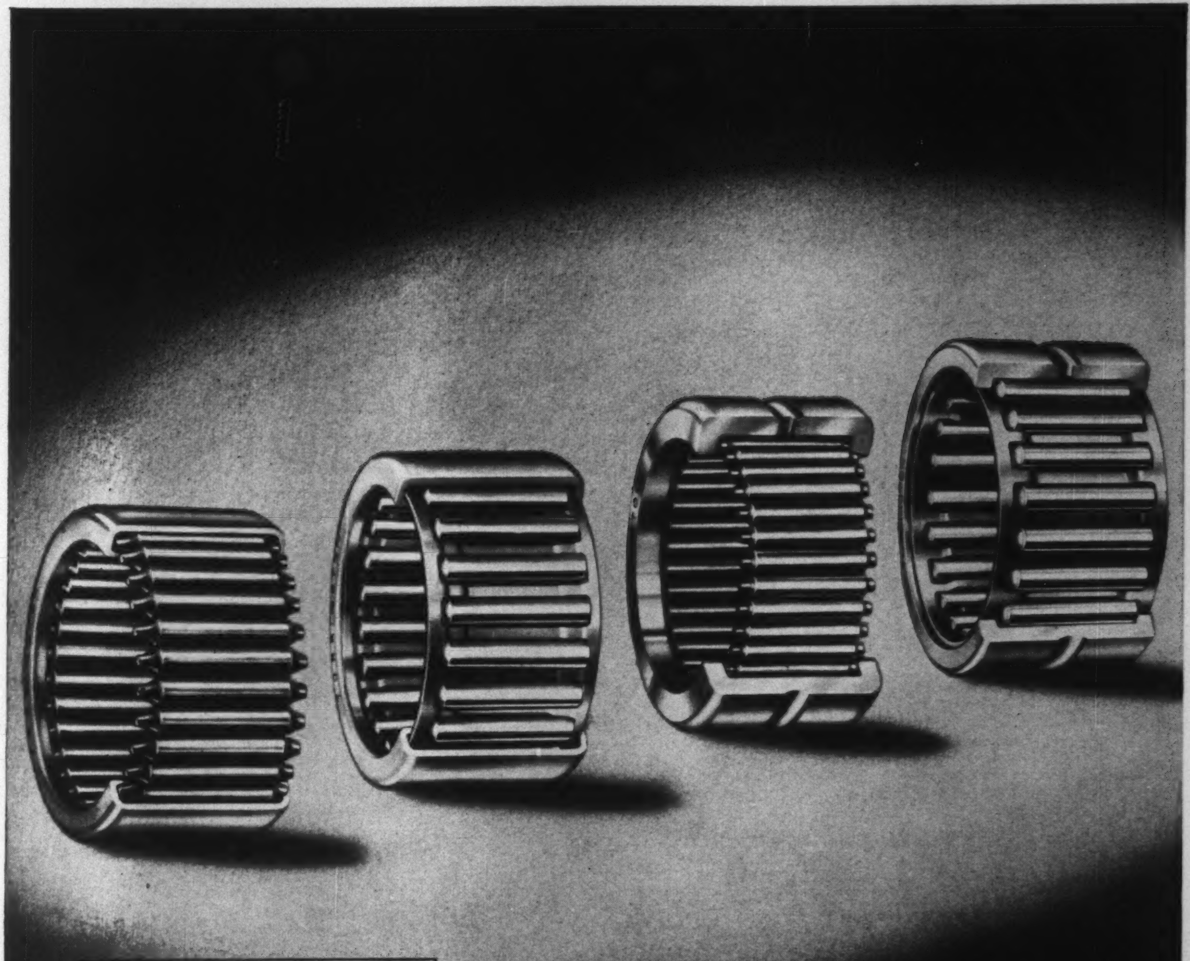

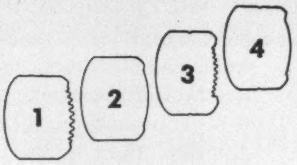

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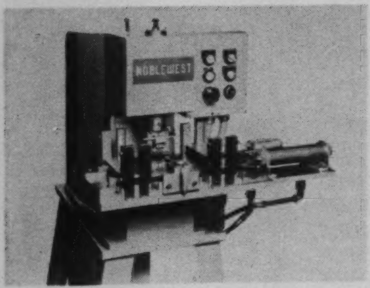


Air-Operated Numbering Press Is Automatic

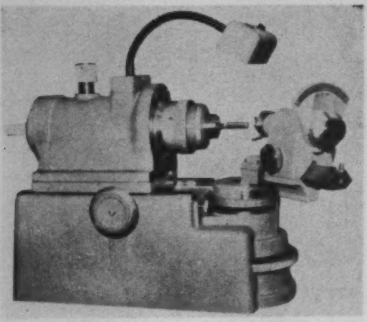
A high-speed serial numbering press is air-operated, electrically controlled, fully automatic, and capable of numbering 4500 pieces per hour. The numbering head advances one digit with each up stroke of the press, with indexing accomplished by a small air cylinder. The machine is furnished complete with all controls, including some that permit independent operation of various components for setup purposes. If preferred, the basic press is available with tooling for single-station marking, forming, and bending. (Noble & Westbrook Mfg. Co.)

For more data circle No. 1 on postcard, p. 367

Vacuum Lifting System for General-Purpose Use

A new vacuum lifting system can be used for general-purpose overhead crane work, or can be custom-engineered to perform automatic or semi-automatic material - handling operations. Very smooth or very rough surfaces are handled with equal ease. Grippers come in various shapes, in sizes up to 25-in. diam, with capacities to 2000 lb per gripper. The system features very fast transfer cycles. (Whiting Corp.)

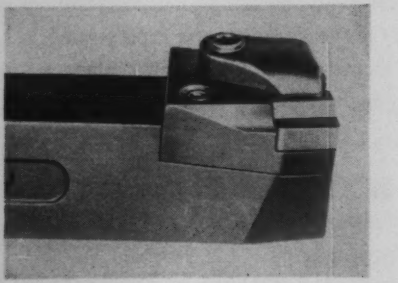
For more data circle No. 2 on postcard, p. 367



Tool Analyser Accomodates Many Small Tools

Originally designed as a tap analyser, a new model, designated as a tool analyser, will accommodate many other small cutting tools, such as drills, mills, and reamers. The tool is precisely chucked, aligned in the same position in which it would be used, and in relation to dimensional scales of the analyser. This permits the relation of tool geometry to production results, as profile and other tool characteristics are checked at magnifications up to 40X. This analyser will take shank diameters from 0.006 to 1⅜ in. Special fixturing and accessories permit the checking of a wide size range of tools, and even workpieces. (Stocker & Yale, Inc.)

For more data circle No. 3 on postcard, p. 367



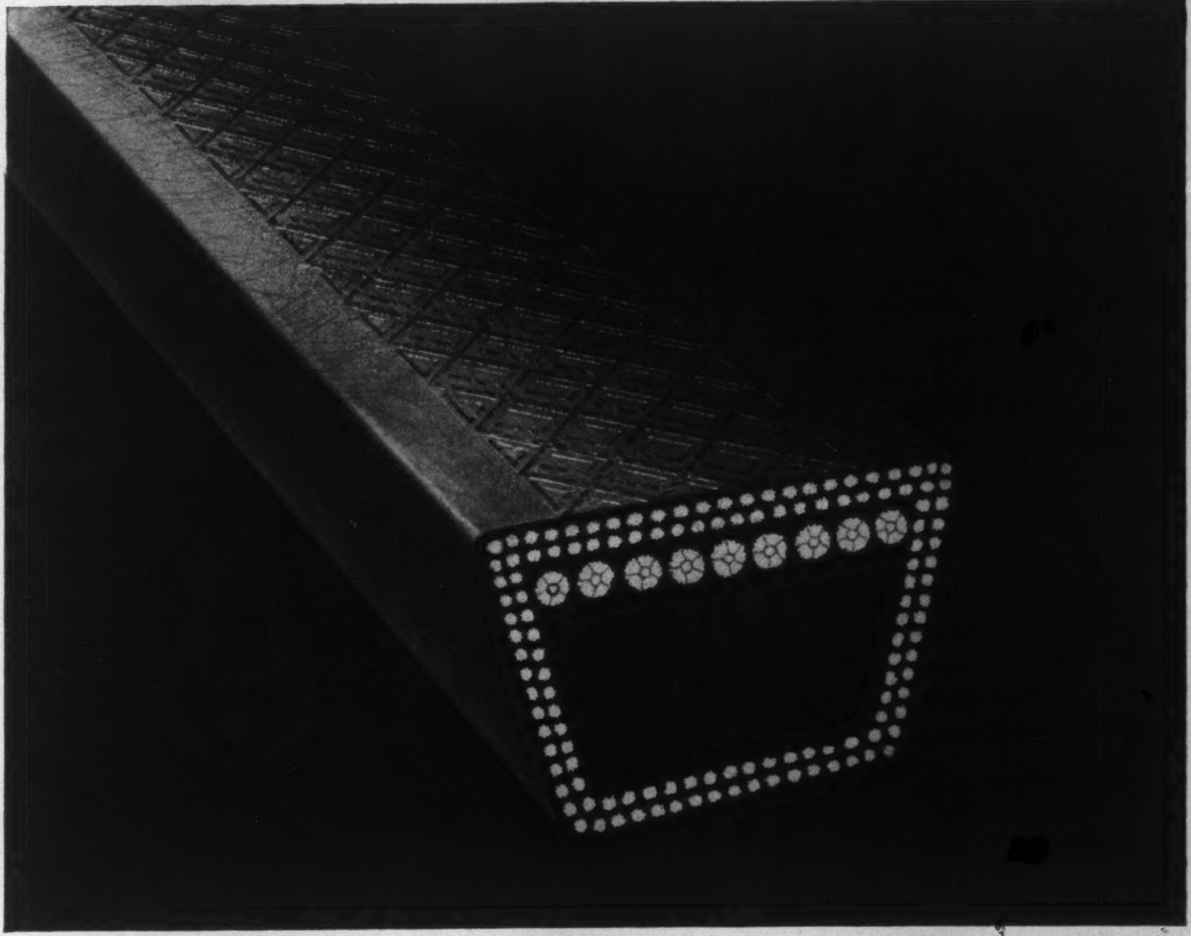
Throwaway Holder Contains Two Sub-Assemblies

An unusually simple holder for throwaway inserts contains only two major sub-assemblies — the shank assembly and the chipbreaker-and-clamp assembly. There are only eight parts in all. The more perishable parts are the least complicated and least costly to replace. The chipbreaker is attached to the clamp, and rises with it to permit indexing of the insert. This toolholder comes in 112 standard shank styles and sizes, for square or triangular inserts, right- or left-hand. Two sizes of Allen wrench maintain the whole line. (Wesson Co.)

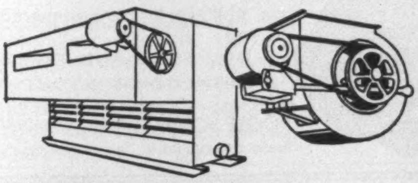
For more data circle No. 4 on postcard, p. 367

AUTO AIRCON STEEL CABLE V-BELTS
from the Power Unlimited complete belt line

**Patented curing method keeps all
the steel pulling members in the same plane.
They remain straight, are never wavy.**



Quiet...smooth... vibration at the vanishing point



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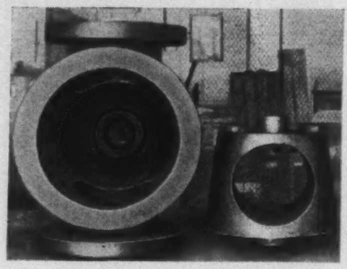

Ductile Cast Iron (Grade 60-45-10) was chosen to cast these 12" Rotovalve parts. It is well known for toughness, machinability, and long wearing characteristics.

The body (left) was dry sand molded. The flange diameter is 25½" and it is 32½" f-f. Rough weight — 836 lbs. The plug (right) was machine molded. Its diameter is 19 15/16" x 16¼" and it has a 12" waterway. Rough weight — 288 lbs.

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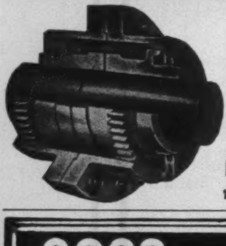

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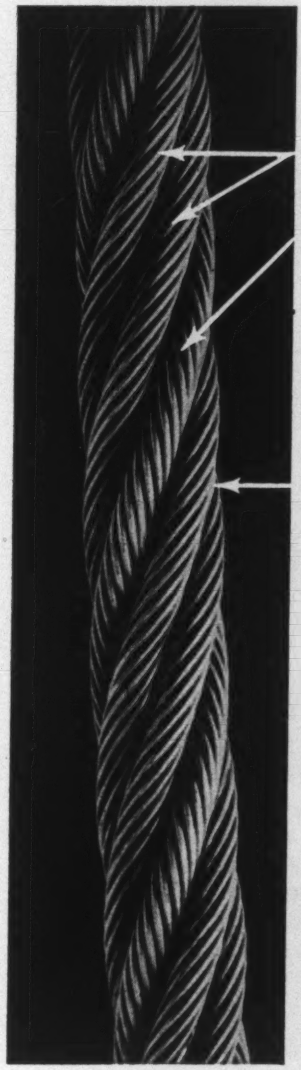

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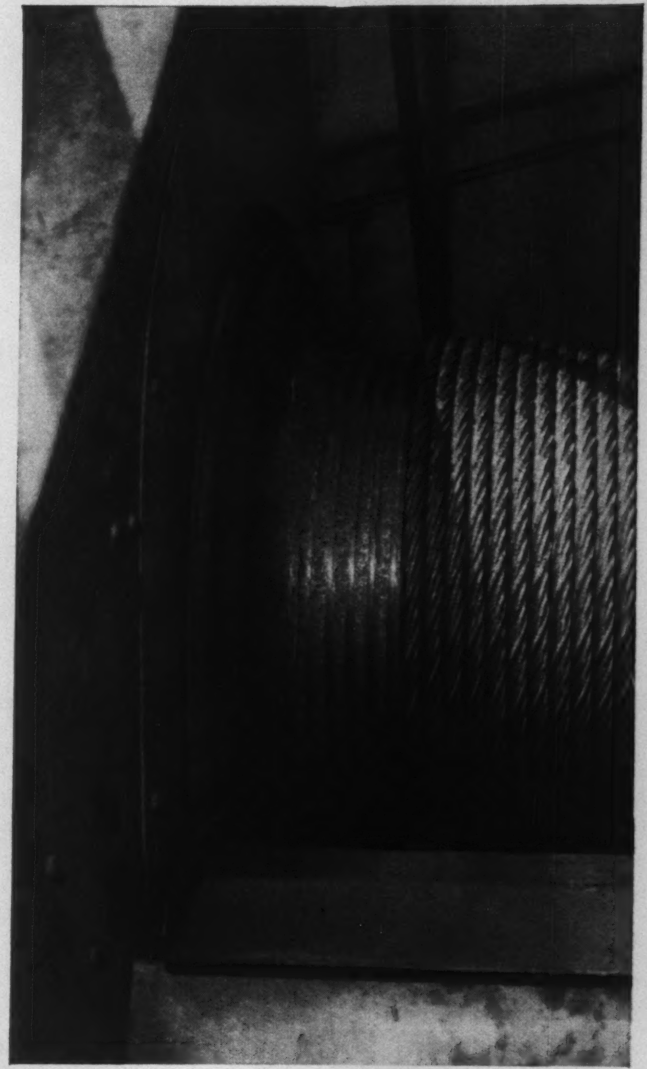


"...we would never hesitate to recommend it"

GRAY & FEAR, CONTRACTORS

This company continues: **"We have been using your Roebling Herringbone* for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."**

This is a direct field quote on the most remarkable development in wire rope in years...a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope—two-ropes-in-one rope—combining the best features of both.

Herringbone delivers extra flexibility, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

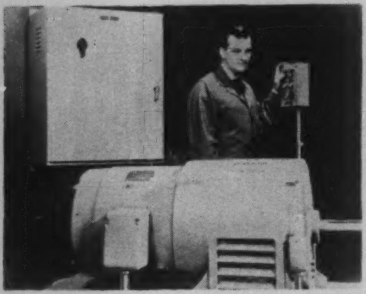
We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Roebling's Wire Rope Division, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

ROEBLING
HERRINGBONE
WIRE ROPE

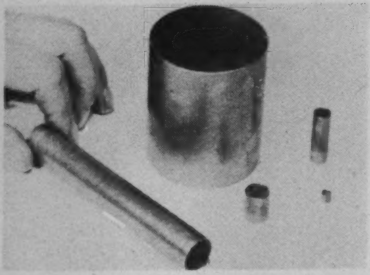
New Materials and Components



Magnetic-Coupled Drives Offer Fine Control

Stepless adjustment over a wide speed range, ease of presetting speeds, and responsiveness to feedback, suit a new line of adjustable-speed drives to automatic control and general industrial use. Coming in sizes from 5 to 100 hp, they feature fewer moving parts for longer life and reduced maintenance. Coupling between motor and drive uses the eddy-current magnetic principle, offering versatile performance over a constant-torque speed range. Ratings through 20 hp can operate down to 100 rpm at rated torque—a speed range of 17:1. (General Electric Co.)

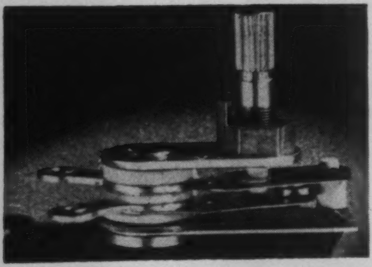
For more data circle No. 5 on postcard, p. 367



Wound-Wire Porous Metal Ups Fluid Filtration

Wound-wire porous metal extends the range of filtration and non-filtration applications. The new filter is wound into hollow cylinders or cones from almost any metal that can be drawn into fine wire. Principal use is in the field of fluid filtration. Pore sizes range from 2 to 1000 microns. The wires are metal bonded at all contact points; therefore the pore sizes are maintained with no shifting. Common backwashing cleans the filter for reuse. (Bendix Filter Div., Bendix Aviation Corp.)

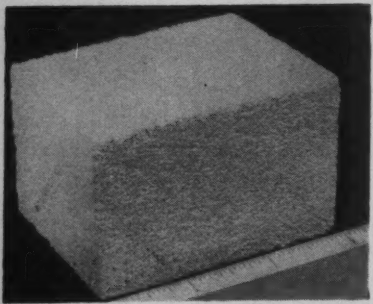
For more data circle No. 6 on postcard, p. 367



Thermostat Limits Lower Operating Range

A positive-off thermostat permits cut-out of thermostatic control through manual operation of the adjusting stem. It provides positive control of electrical circuits in response to temperature changes, and it's designed for use with appliances, heating and ventilating equipment. The restricting device can cut out the thermostatic control altogether, or it can limit the lower range of operation. Temperature range is 0°-650°F, rated at 15 amp on 115 v ac; 10 amps on 230. (Norwalk Thermostat Co.)

For more data circle No. 7 on postcard, p. 367



High-Temperature Ceramic Brick Purges Gases

Absorbent properties of new ceramic insulating bricks permit gases to pass through for purging or evacuation. The ceramic material has the density of a 1600°F insulating firebrick, and an insulating value comparable to a 2300°F firebrick. Yet it can be used up to 3400°F. It's readily cut, sawed, or filed. The ceramic material (aluminum oxide), formed in convenient brick size of 2½ x 4½ x 9 in., has met immediate acceptance as lining for hydrogen furnaces, for vacuum processing, and as a catalyst support in generators. (Ceramic Div., Ipsen Industries, Inc.)

For more data circle No. 8 on postcard, p. 367

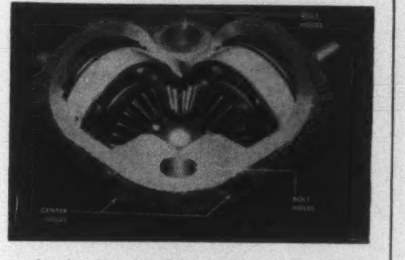
Penetrating Primer

Containing a phenolic resin, a new metal primer has increased adhesion, flexibility, blister resistance, and surface penetration on both clean and rusty metals. It soaks into the pores of the metal, and is thus both in and on the surface. (Minnesota Linseed Oil Co.)

For more data circle No. 9 on postcard, p. 367

Angle Drive

A right-angle drive has a heavy-duty bearing structure to permit production use without overheating. Ball races ground in the ends of hardened gears provide both thrust and radial stability. Transmission ratio is 1-to-1 for 1⅓ hp at 3000 rpm, or ⅓ hp at 750 rpm. Maximum allowable speed is 6000 rpm. The device can be used with air drills or flexible shafts, or with standard ¼, 5/16, and ⅜-in. electric drills. Center holes are provided, in dead alignment with the shafts. (Price & Rutzebeck.)



For more data circle No. 10 on postcard, p. 367

Copper-Stainless Tube

A new type of clad tubing has properties not found in any single metal or alloy. It is highly corrosion-resistant and has high lateral thermal conductivity. It is designed for heat-exchange pressure tubes and for conduction of fluid or gas under pressure at elevated temperature. With the tensile properties of stainless steel, it combines the good brazing surface of copper. It is available with either copper or stainless as the outside cladding material, in an OD size range from 0.030 to 0.750 in., with wall thicknesses from 3 to 45 thousandths. (Metals & Controls Div. of Texas Instruments Inc.)

For more data circle No. 11 on postcard, p. 367

ALLEN

The cost of ALLEN Hex-Socket Cap Screws is only a minor fraction of your assembly costs . . . be sure you're getting the timesaving, cost-saving advantages of genuine Allens!

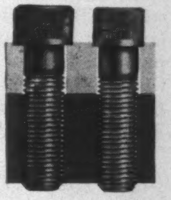
Ever since Allen first produced the hex socket head screw nearly fifty years ago, specifying *genuine* Allens (made by Allen of Hartford) has been a sure way to guarantee dependable threaded fastening.

Only *genuine* Allens have Leader Points that make starting easier, and greatly minimize danger of cross threading. *Genuine* Allens are "pressurformd" to preserve the long fibers uncut throughout the length of the screw, giving stronger sockets for greater tightening torque.

Write for samples and engineering data. See how *genuine* Allens will make your product better.

ALLEN HEX-SOCKET SCREWS HEAD

Allen's new 1960 Series Socket Head Cap Screws give up to 2⅓ times more load carrying capacity, without indentation.

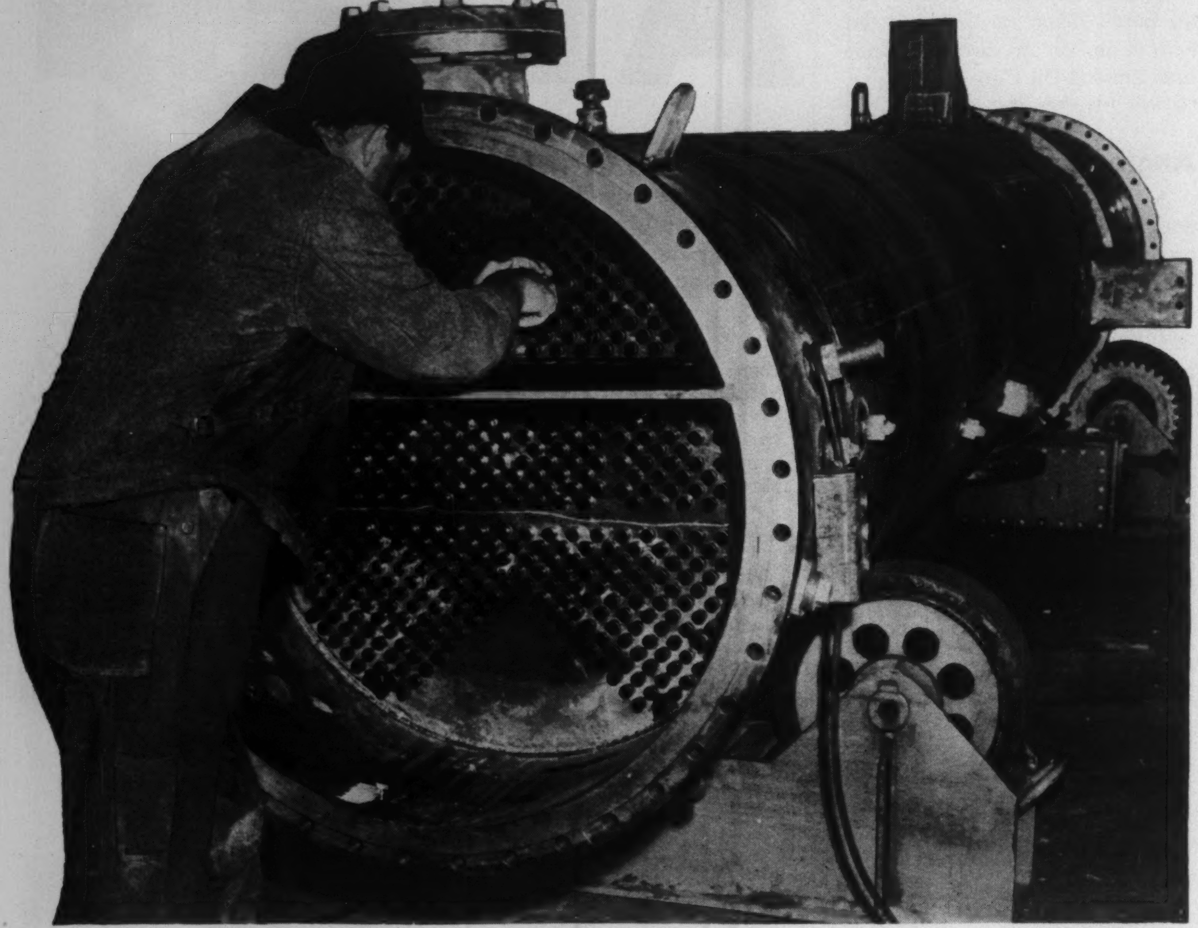


Head diameter of sizes from ¼" up is now uniformly 1½ times the body diameter—providing more under-the-head bearing surface, and a proportionate increase in clamping force. Write for new Bulletin G-25, with full specifications.

Stocked and sold by leading Industrial Distributors everywhere

ALLEN
MANUFACTURING COMPANY
Hartford 1, Connecticut

Waste heat turns into $40,000 saving thru *Carpenter* Stainless Tubing



Reclaiming valuable heat from spent black liquor vapors is a real money-saving operation with this 2600 sq. ft. 3-pass surface condenser. In the process of condensing distillation products out of a heat vapor line from a multiple-effect evaporator, the unit extracts over 19 million Btu's per hour from these vaporous products and entrained non-condensable sulphides. With this recovered heat, clean filtered water used for washing bleached pulp and other plant operations is pre-heated 25 to 30°F. Steam demand on the mill's boilers for water heating is thereby greatly reduced and fuel consumption cut. The net result of this heat recovery operation is a saving of approximately $40,000 yearly.

Contributing importantly to the success and economy of this recovery unit is Carpenter Type 304 Stainless Heat Exchanger Quality Tubing. High operating efficiency is sustained, downtime and maintenance are minimized, loss of capacity due to scale formation is avoided and long tube life is assured. Close uniform tolerance of the tubing saves installation time and costs. As a result, the use of this stainless tubing has become standard practice in these surface type condensers for black liquor evaporator service.

Now you can get cost-saving Carpenter Stainless Heat Exchanger Quality Tubing from our large mill stocks. Types 304 and 316 are available in all popular sizes and gauges. Contact our nearest office for prompt, helpful service on your next order. Send for our up-to-date Selecting and Buying Guide, Bulletin T.D. 120. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

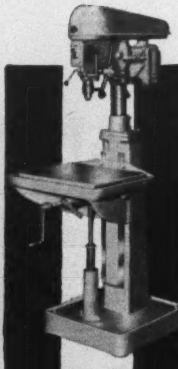
your master key
to cost savings
in pulp mills

Carpenter

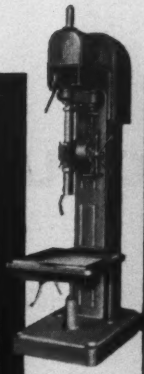
the house of corrosion control

Stainless Tubing & Pipe

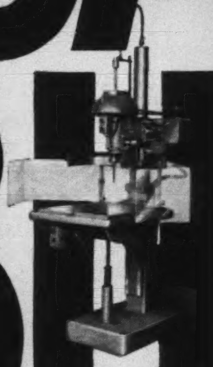
QUALITY-BUILT



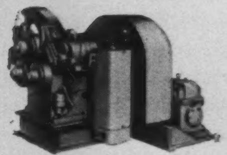
"BUFFALO" No. 15 Drill



New "BUFFALO" R-P-Msters



"BUFFALO" No. 18 Drill



"BUFFALO" Bending Rolls

"BUFFALO" MACHINE TOOLS

COST YOU LESS IN THE LONG RUN

Only Buffalo gives you the "Q" factor . . . an important extra in the quality of our design and construction. This means greater economy for you . . . extended trouble-free productive service.

Now, in a broader line of new and improved models, BUFFALO machine tools are an even better value. That's why you will find these units especially worth investigating.

Buffalo No. 15 Drills — New design improvements provide easier, faster operation, maximum flexibility and even greater accuracy. Available in bench, floor and pedestal models from 1 to 6 spindles. Write for Bulletin 4024.

Buffalo No. 18 Drills — Heavier than No. 15 yet highly sensitive, the No. 18 is ideal for a wide variety of shop operations. Capacity is 1" in cast iron. Features include precision ball bearing spindle, easy-to-operate 3-spoke feed and quick, convenient adjustments. Choose from 19 models to suit your exact needs. Write for Bulletin 3123-E.

Buffalo R-P-Mster — These famous variable speed drilling machines now offer capacities up to 2". Exclusive Torque-Controlled Power Feed protects bits and machine. Operator can use maximum speed and feed for a given hole size with no danger of overloading. Designed for ultra-smooth, accurate operation. Write for Bulletin 3257-C.

Buffalo Bending Rolls — Ideal for fast, low-cost bending of structurals into circles, spirals or segments. Easy roll changes and adjustments eliminate need for expensive dies. Operators need not be highly skilled. Upper roll is quickly lowered, set or released hydraulically. Horizontal or vertical types in a capacity range to suit almost every need. Write for Bulletin 352-D.

For full details on these and all Buffalo machine tools, contact your Buffalo machine tool dealer . . . or write us direct.

ESTABLISHED 1877
"Buffalo"
MEMBER N.M.T.B.A.

BUFFALO FORGE COMPANY
492 BROADWAY • BUFFALO, NEW YORK
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING
PUNCHING
SHEARING
BENDING

New Catalogues and Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 367.

End-Mill Driver

A new end-mill driver with eccentric micrometer adjustment permits the use of end mills up to 1/8 in. undersize. Offset orbital motion permits greater precision, saves time in milling to center line on keyways, and reduces the need for special cutter sizes. A 4-to-1 increased speed ratio gives the cutter four times its original speed. The attachment is adjustable from 0 to 1/16 in. off center. (Portage Double-Quick, Inc.)

For free copy circle No. 12 on postcard, p. 367

Fast Finisher

A pamphlet describes two powdered compounds designed to remove light oil and phosphate steel surfaces rapidly in one operation prior to painting. Used for soaking or spraying, they produce little foam, and no scale on tanks. The entire cycle takes five minutes. (Frederick Gumm Chemical Co. Inc.)

For free copy circle No. 13 on postcard, p. 367

Machine Control

A numerical-control machine positioning system provides automatic positioning of a two-axis table from a pre-programmed punched 1-in. tape. A third axis can be added. Accuracy and repeatibility are both ±0.0002 in. (Hughes Aircraft Co.)

For free copy circle No. 14 on postcard, p. 367

Conveyor Lubricators

An eight-page catalog describes new models of automatic conveyor lubricators. They feature complete adjustability, applicability to all systems, and elimination of all drippage. (J. N. Fauver Co., Inc.)

For free copy circle No. 15 on postcard, p. 367

Cryogenics

A folding pocket card presents the physical-property equivalents of some cryogenic fluids in tabular form. Fluids covered are those most common in the chemical and missile industries. (Linde Co.)

For free copy circle No. 16 on postcard, p. 367

Material Handling

A large folder points out that one dollar out of every four spent on production goes into material handling. It goes on to recommend a line of material-handling equipment for efficiency and time savings. (Towmotor Corp.)

For free copy circle No. 17 on postcard, p. 367

Brazing Alloys

A folder describes special low-temperature alloys for brazing and soldering of such materials as alu-

ARMSTRONG

Drop Forged CLAMPS

LEADERS IN THE DROP FORGED CLAMP FIELD

. . . in design, machining and strength; in completeness of line in both sizes and types.

Designs are based on a full knowledge of clamp uses and requisites. Drop forging assures die-perfect form, texture toughness and freedom from structural faults. Maximum stiffness is attained by a discerning selection of steels with accurate controlled heat-treating, tempering and testing.

For dependability and long useful life, specify and standardize on ARMSTRONG Drop Forged Clamps.

Write for ARMSTRONG General Catalog showing almost 5000 industrial tools

Buy ARMSTRONG TOOLS from your Industrial Distributor

ARMSTRONG BROS. TOOL CO.

5209 W. ARMSTRONG AVE. • CHICAGO 46, ILL.

Installing the "Heart" of World's First Atom-Powered Merchant Ship

It took tens of thousands of different items to build the N. S. Savannah, world's first atom-powered merchant ship. And each must perform its part perfectly.

The super-critical job of lifting the "heart" of the nuclear reactor—a 105-ton pressure vessel—was assigned to a Yellow Strand Safety Sling. The Sling, a 45′ grommet 2⅝″ in diameter, made of 6 parts of ⅞″ Yellow Strand "POWERSTEEL" Wire Rope was employed to raise and lower the vessel during testing operations at the Babcock & Wilcox plant at Barberton, Ohio—and then carry it to a special heavy-duty railroad car—and finally set it in place aboard the N. S. Savannah. Placement of the reactor within the hull was complicated by the 3° launching angle, and the narrow margin of error of ⅛″. With Yellow Strand Safety Sling, the job was easily and quickly completed.

When lives, property or production are at stake—make your lifts with Yellow Strand . . . made by B & B! See your distributor today. Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis, Mo.

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WIRE ROPE SLINGS CLIPS

WYCKOFF
COLD FINISHED
STEELS
ARE
PRE-CONDITIONED
FOR YOUR JOB
OUR CONSTANT RESEARCH PROGRAM IS YOUR BEST GUARANTEE OF QUALITY CONTROL

Your assurance for:

1. Straightness
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You will save Time, Metal and Money when you specify *Wyckoff* Steels.

SPECIALISTS IN COLD FINISHED STEELS EXCLUSIVELY

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WYCKOFF STEEL PRODUCTS • Carbon, Alloy and Leaded Steels • Turned and Polished Shafting • Turned and Ground Shafting • Large Squares • Wide Flats up to 12¾"x 2¼" and 14" x 1¼" • All types of Furnace Treated Steels including Carbon Corrected Steels

minum, iron, copper, and their alloys. Characteristics, applications, and use of these alloys are described. (All-State Welding Alloys Co.)

For free copy circle No. 18 on postcard, p. 367

Differentials

Mechanical differentials are the subject of a 24-page technical booklet. It describes them, shows how they work, and design advantages. The application of a line of them to precision instrument and servo control work is illustrated. (PIC Design Corp.)

For free copy circle No. 19 on postcard, p. 367

Dry Coolant

A four-page brochure describes a dry coolant treatment for grinding wheels. Wheels impregnated with the material cut faster with a clean, heat-free action. The result is burn-free grinds with improved micro-finish. A molecular graphite is the base of the material. (King Graphite Products, Inc.)

For free copy circle No. 20 on postcard, p. 367

Press Trip Control

Described in a catalog is a trip control which can easily be applied to manually operated stamping machines, air presses, riveters, and other production equipment to make it safer and more productive. Illustrations of 15 varied applications are included. (Micro Switch)

For free copy circle No. 21 on postcard, p. 367

Gearbelt Drives

A line of gearbelt drives combines the flexibility of belt drives with the advantages of chain and gear drives. Power is transmitted by positive engagement of belt teeth with pulley grooves. The line is specified in a 56-page catalog. (Browning Mfg. Co.)

For free copy circle No. 22 on postcard, p. 367

QUALITY CONTROL

That's the secret of good breeding . . . and why Federal Ball Bearings are all champions.

Take race grinding: the operator must gage race diameter, roundness, contour, centerline, eccentricity of raceway with O.D., parallelism of the race with the face of the bearing ring . . . and finish. Then line inspectors double check.

This is typical of the quality control all along the Federal production line. Double work? Sure! But it means a bearing as close to perfection as a bearing can get. One that's twice as reliable, too. That's why they're specified by so many top industrial companies. Why not put them to work yourself? Start today by sending for the Federal catalog where you'll meet hundreds of different type ball bearings . . . all top breed . . . in 12,000 sizes!

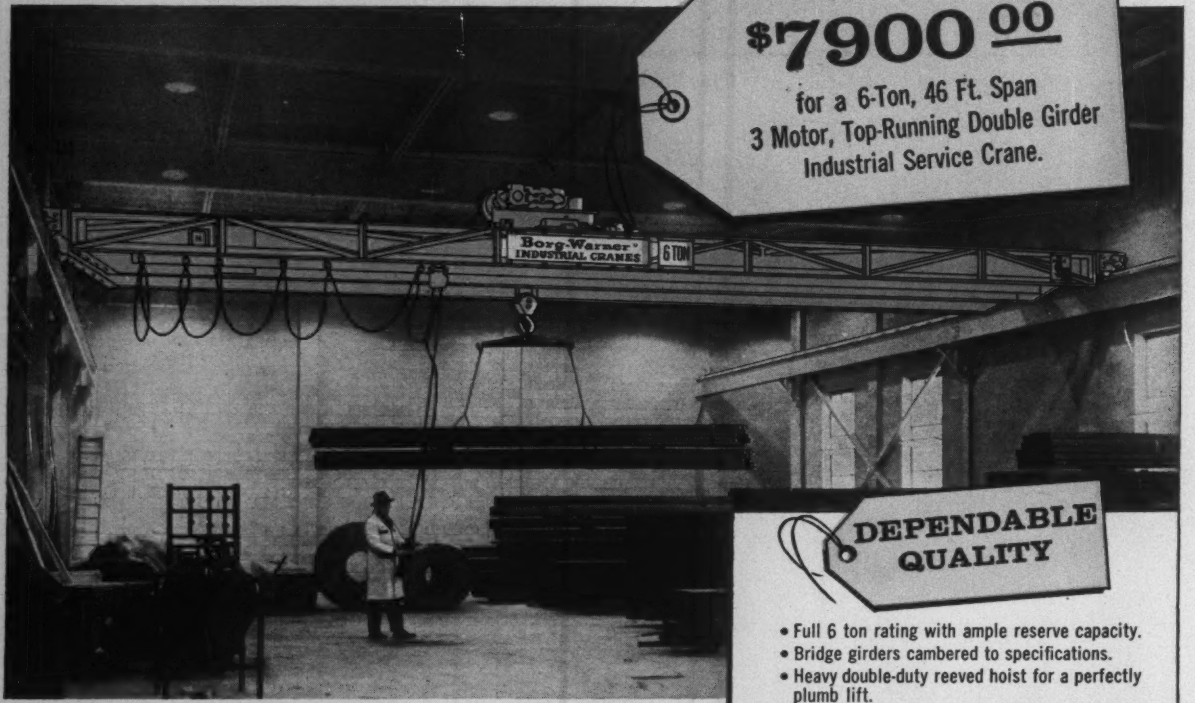
The Federal Bearings Co., Inc., Poughkeepsie, N. Y.

One of America's largest ball bearing manufacturers

Federal
BALL BEARINGS

FEDERAL ON FILM—A 16 mm. color sound film takes you through our 400,000 sq. ft. plant. Loaned free. Just ask for it.

Now you can afford Borg-Warner Quality in your next overhead Crane...



$7900.00

for a 6-Ton, 46 Ft. Span
3 Motor, Top-Running Double Girder
Industrial Service Crane.

Advanced engineering and standardization make...
Borg-Warner Industrial Cranes
BETTER VALUES at LESS COST

Borg-Warner crane engineers and production men have taken a new look at the entire line and come up with important economies through extensive use of standardized interchangeable components. Because these savings are passed along to you, you get more crane for your money when you specify Borg-Warner Industrial!

Efficient overhead materials handling pays off. You get more overhead storage space than fork truck handling provides. You benefit from aisles and work areas uncluttered by floor-type handling equipment. You can reach all areas under the crane, the full length of the runway.

If you are planning a new factory building, an addition to present facilities or a modernization program, it will pay you to look to Borg-Warner Industrial Cranes for the best values in overhead materials handling equipment.

DEPENDABLE QUALITY

- Full 6 ton rating with ample reserve capacity.
- Bridge girders cambered to specifications.
- Heavy double-duty reeved hoist for a perfectly plumb lift.
- Heavy duty steel bridge and trolley wheels.
- All welded jig bored, jig assembled end trucks.
- Long life precision ball and roller bearings throughout.
- Precision assembly of girders and end trucks with fitted bolts in reamed holes.
- Outrigger machinery girder construction.
- Magnetic bridge brake.
- Heavy duty gear reduction bridge drive.
- Fluid coupled bridge and trolley drives.
- Full magnetic push-button floor control.

ADVANCED DESIGN

The crane illustrated is a typical double girder installation. Span may be shorter or longer with greater or smaller capacity and for lighter or heavier duty, intermittent or continuous. Whatever your overhead handling requirements Borg-Warner Industrial Cranes can supply your needs with quality equipment at a price you can afford!

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FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Aluminum Coatings

Hot-dip aluminum coating molecularly bonds a coating of pure aluminum to a ferrous metal, with a hard, impervious, abrasion resistant interlayer of Fe-Al$_3$ alloy uniting the two. This prevents atmospheric corrosion and high temperature oxidation of the ferrous parts. (Arthur Tickle Engineering Works, Inc.)

For free copy circle No. 23 on postcard

Beryllium Forgings

A pictorial description of the design and fabrication of beryllium heat-sinks for N.A.S.A.'s Project Mercury covers the production of large, high purity beryllium billets. The 76-in. beryllium shields are used to test the design of manned orbital space capsules. (The Brush Beryllium Co.)

For free copy circle No. 24 on postcard

Preset Counters

A line of mechanical, electromagnetic and photoelectric counters are described in a folder. These counters permit an operator to preselect a desired number of pieces, turns, strokes, lengths, or other units, simply by setting the desired number on the face of the instrument. (Veeder-Root, Inc.)

For free copy circle No. 25 on postcard

Abrasive Performance

Performance and statistical data compiled in extensive research and experimentation is revealed in a handbook. Topics discussed include: How performance controls economy in blast cleaning abrasives; how abrasive breakdown characteristics affect finishes and cleaning costs; how abrasive hardness affects cleaning speed; how abrasive size affects finish quality; and how to control the finish achieved by airless blast cleaning. (Wheelabrator Corp.)

For free copy circle No. 26 on postcard

Plastics for Tooling

Employing case histories, an illustrated eight-page bulletin gives details of successful applications in making jigs, fixtures, metal forming dies, duplicating masters and other tools. It describes how manufacturers have saved time and reduced costs in their tooling programs. (Devcon Corp.)

For free copy circle No. 27 on postcard

Creative Engineering

A bulletin, "Creative Engineering Dares to Challenge Tradition," describes special machines, automotive transfer and automation equipment. Installation pictures are featured. (Jorgensen Conveyors, Inc.)

For free copy circle No. 28 on postcard

Circuit Breakers

A 40-page bulletin pictures and describes molded circuit breakers ranging from the smallest, for lighting circuit protection, to 100,000-ampere interrupting capacities and other special purpose equipment. (I-T-E Circuit Breaker Co.)

For free copy circle No. 29 on postcard

Overhead Handling

Overhead handling of loads from ¼ to 60 tons is described in a catalog covering more than 20 different kinds of cranes, hoists, and specialty and accessory items. Special and general purpose equipment are featured. (The Harrington Co.)

For free copy circle No. 30 on postcard

Hydraulic Pumps

Heavy duty pumps are featured in an informative bulletin. Another bulletin covers grout pumps. Economical pumping performance in handling slush, mud and core drilling are stressed with the grout pumps; solvents, sewage, tar and

---

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 1/7/60

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

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City .... Zone .... State ....

FREE LITERATURE

mash are a few of the items handled with the heavy duty pumps. (Wagener Pump Div., Canton Stoker Corp.)

For free copy circle No. 31 on postcard

Rust Preventative

The rust preventative can be used with a variety of different oil carriers. Complete application and test data, as well as military specifications, are included in a bulletin. (L. Sonneborn Sons, Inc.)

For free copy circle No. 32 on postcard

Gold Finishes

Bronzeless gold spray finishes are discussed in an eight-page booklet. The finishes provide an appearance comparable to coatings made by the use of bronze powder. And they offer advantages over the conventional powder finishes by being lower in cost, harder, non-tarnishing, non-gelling and easier to apply. (Bee Chemical Co.)

For free copy circle No. 33 on postcard

Portable Welders

A brochure illustrates and describes a versatile line of portable resistance welders available for the metalworking industry. (The Federal Machine and Welder Co.)

For free copy circle No. 34 on postcard

Vee Belt Drives

Compact packages made possible through high-strength belts and sheaves handle up to three times the horsepower of conventional belt drives occupying the same space. (T. B. Wood's Sons Co.)

For free copy circle No. 35 on postcard

Electric Power Drives

Completely revised, a 68-page catalog aids in quick and easy selection of electric power drives. Appearing for the first time are data and prices on a new line of dripproof motors. Prices, dimensions and modifications for squirrel cage motors, gearmotors, speed reducers, right angle gearmotors, right angle variable speed drives and variable speed drives are included. (Sterling Electric Motors)

For free copy circle No. 36 on postcard

Materials Handling

Safe electrification on overhead materials handling equipment reduces maintenance and provides assurance against power interruptions. Maximum safety and long equipment life are featured in an illustrated bulletin. (Cleveland Tramrail Div., The Cleveland Crane & Engineering Co.)

For free copy circle No. 37 on postcard

Pillow Blocks

A new line of malleable tapered-roller-bearing pillow blocks is covered in a four-page pamphlet. They feature eccentric locking collar, labyrinth grease seals, and elongated bolt holes. (Browning Mfg. Co.)

For free copy circle No. 38 on postcard

Chemical Govt. Specs

A new catalog lists 1000 official Government Specifications covering a company's line of adhesives, sealants, paints, cleaning compounds, and chemical compounds. (Magic Chemical Co.)

For free copy circle No. 39 on postcard

Power Supplies

Heavy-duty power supplies, ac and dc, are covered in a catalog. They are designed to regulate voltage, current, or power for industrial processes, and are manufactured to customer specifications. (Hevi-Duty Electric Co.)

For free copy circle No. 40 on postcard

Ball Bearing Units

Compact cast iron pillow blocks and take-up units and frames are described in a 24-page catalog. The units are available with sealed precision ball bearing cartridges in shaft sizes from ½ to 2-7/16 in. Also illustrated are economical commercial sealed bearings. (Roberts Mfg. Co.)

For free copy circle No. 41 on postcard

No. 1 and No. 2 Hot-Dip Galvanizing Lines, Martins Ferry Plant, Wheeling Steel Corporation

Wean, Wheeling and Galvanizing . . .

The advantages of corrosion-resistant, zinc-coated sheets might well have been lost to history had it not been for the development of continuous, hot-dip galvanizing lines. Such lines brought galvanized sheets within the rigid limitations of acceptable product and did so at much lower operating costs.

The Wean Engineering Company worked in close cooperation with the Wheeling Steel research department on the development, design, and construction of these lines at the Martins Ferry plant. The lines are currently producing a wide range of top quality galvanized sheets and coils at speeds up to 300 fpm.

Wean has designed and built galvanizing lines for a wide variety of customer requirements. Why not take advantage of Wean's *creative engineering* experience on your next coating line project.

THE WEAN ENGINEERING COMPANY, INC. • WARREN • OHIO

Now the nation's third largest steel plate producer

Protecting product quality is the responsibility of Lukens' Metallurgical Division. Four members of this expanded control team are, left to right: Sam Lemmon, Metallurgical Service; Lou Mandich, Manager; Howard Turner, Inspection; and Joe Althouse, Chief Metallurgical Engineer.

LUKENS STRENGTHENS THE GUARD ON QUALITY

To the steel buyer, Lukens' new ranking as a steel plate producer means more than increased tonnage. It promises complete confidence in buying decisions. For, together with the expansion of its steel making facilities, Lukens has strengthened its control over plate quality at every step—from open hearth to customer's shop.

The men assembled above in Lukens' new Physical Testing Laboratory spearhead this increased control. Working with the industry's broadest range of plate materials—from ordinary carbon steel to ultrasonically tested hullplate for nuclear submarines—these experts represent the emphasis Lukens places on dependable plate quality.

Now consolidated into one closely working team are these vital functions: Inspection, Plant Metallurgy, Metallurgical Development, Quality Control and Metallurgical Service. Under Lou Mandich's direction, and together with Lukens' other operating and marketing groups, they are successfully pursuing the overall aim of our expansion program: *capacity and quality levels to meet the growing needs of our plate fabricating customers.*

Lukens Steel Company, Coatesville, Pa.

NEW CAPACITY ~ NEW QUALITY

LUKENS ®

SERVING INDUSTRY WITH A WIDE RANGE OF SPECIALTY CARBON, ALLOY, ARMOR AND CLAD STEEL PLATE • HEADS • PLATE SHAPES • PLATE-MATE WELDING ELECTRODES AND WIRE

The Iron Age Summary

Why Steel Prices Will Go Up

Settlement was too rich for some steel producers to absorb without price hikes.

Some estimates go as high as $5 a ton, but other indications point to a $4 maximum.

- The government-sponsored steel labor settlement will probably cost steel users a few extra dollars a ton for their steel soon.

The cost of the agreement, which the industry reluctantly accepted after terrific government pressure, is too rich for the blood of many steel companies.

How Much Cost—The settlement will run to 41¢ an hour (some figure it at 39¢) over a 30-month period. This includes a 4¢ an hour cost-of-living raise, effective immediately, which the union claimed was due because of the old contract.

Many companies must have price relief to absorb the government-dictated settlement.

It is unlikely that any increases will exceed $5 a ton. And it is more likely that they may run less than $4 a ton. If some medium or smaller-sized companies raise their prices more, the competitive situation will bring them into line.

Not Voluntary—Just when prices will go up is uncertain, but some increases may come soon. In any case, they will come.

The settlement leaves some scars. Although Administration sources referred to the settlement as "voluntary," this is stretching it a little. The politicians took over some time ago.

Company and union relations are less bitter than they were a few weeks ago, but there is a lot of healing to be done before the next contract time in June, 1962.

Over Their Heads — David J. McDonald, USWA president, again went over the heads of negotiators and reached the major framework of the agreement with the heads of the eleven negotiating companies.

Missionary work and steering on the framework and policy was carried out in Washington by the top executives of the three major producers.

On cold-blooded analysis, the union, through government help, scored a major victory. The companies, under government pressure, lost their battle along major fronts. The well-publicized local practices hassle is being settled along the lines the union argued.

Market Impact—The end of the negotiations, which also ended the threat of a renewed strike Jan. 26, brought relief to steel users, but no immediate easing in steel supplies.

However, the assurance of full shipments brought an easing of tension and was reflected in some developments in the premium price market. One indication was the cancelling of at least one conversion deal by a major automaker and uncertainty about continuation of others.

On most products, the market remained tight, but consumers now have assurance of uninterrupted steel operations.

Steel Output, Operating Rates

	This Week	Last Week	Month Ago	Year Ago
Production				
(Net tons, 000 omitted)	2,707	2,717	2,689	2,085
Ingot Index				
(1947-1949=100)	168.5	169.1	167.4	129.8
Operating Rates				
Chicago	95.0	94.0	93.0	79.0
Pittsburgh	96.0	98.0*	96.0	70.5
Philadelphia	100.0	101.0*	103.0	71.0
Valley	92.0	93.0*	95.0	71.0
West	88.5	93.0*	94.5	80.0
Cleveland	98.0	98.0*	95.5	81.0
Buffalo	105.0	107.0	107.0	66.0
Detroit	100.0	99.5*	94.0	97.0
South	93.0	89.0	86.5	71.0
South Ohio River	98.0	102.0*	100.0	82.0
Upper Ohio River	94.0	94.0*	93.0	86.0
St. Louis	86.0	97.5*	102.0	90.0
Aggregate	95.0	96.0	95.0	73.6

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	6.196
Pig Iron (Gross ton)	$66.41	$66.41	$66.41	$66.41
Scrap No. 1 hvy (Gross ton)	$41.50	$41.17	$42.50	$40.17
No. 2 bundles	$27.83	$27.83	$28.83	$29.33
Nonferrous				
Aluminum ingot	28.10	28.10*	26.80	26.80
Copper, electrolytic	33.00	33.00	33.00	29.00
Lead, St. Louis	11.80	11.80	12.80	12.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	99.375	98.50	99.00	98.25
Zinc, E. St. Louis	12.50	12.50	12.50	11.50

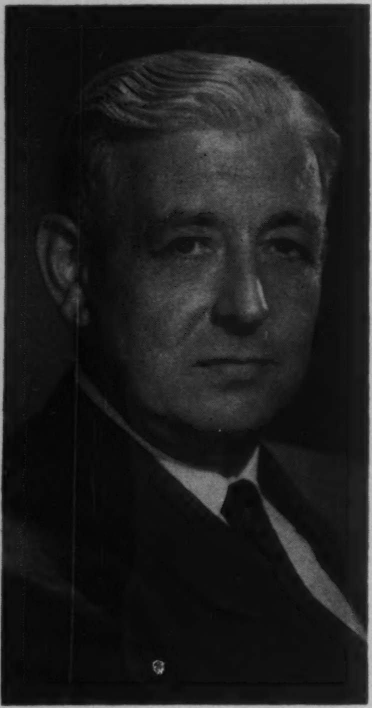
Steel: Purchaser's Prime Goal

There is no doubt that there will be a rush to get steel in the first half of 1960.

A. G. Ruediger, director of purchases, Carrier Corp., says this will dominate purchasing.

▪ Steel will be the target of purchasing activity in first half of 1960. There is no doubt there will be a general rush to rebuild strike-depleted steel inventories during the first six months of the New Year, A. G. Ruediger, director of purchases, Carrier Corp., and chairman, Steel Committee, National Assn. of Purchasing Agents, told The IRON AGE.

NAPA members report no serious shortages other than steel and add they hope to have inventories balanced with production by late April or early May. However, cautions Mr. Ruediger, these dates have been set mainly by larger steel users with strong mill relationships. And some steel items, particularly galvanized and cold-rolled sheets, will be short for longer periods. Production cutbacks because of lack of these seem likely.



A. G. RUEDIGER: A general rush to rebuild inventories.

Normal State—Aim is to have inventories geared to immediate production needs by the end of the first quarter, with exception of specific items. "However," says Mr. Ruediger, "this does not mean that a satisfactory inventory can be built into pipelines that would permit changing schedules as can be done during normal times."

Metalworking purchasing agents generally will be satisfied with a "normal" 30-day inventory and will not push for surplus steel stocks. There appears to be little sentiment for hedge buying against possible price increases. NAPA members look for no steel price increases in 1960. They are relying heavily on Roger Blough's promise that U. S. Steel (and hence the industry) will not raise prices if a labor contract can be negotiated without government mandate. Some purchasing agents argue that even with a dictated contract, steel mills will probably hold to present prices through 1960.

Good Profit Picture—Buyers following this reasoning point to high order level at mills, permitting the steel industry full operation and a satisfactory profit picture. Such an argument is predicated on the assumption that even a government-written contract would not be overwhelmingly inflationary. However, even the most optimistic purchasing agents admit there is as yet no sign from mills that prices will be held under these circumstances.

Steel dominates the list of metalworking materials in short supply. And a resumption of the steel strike would certainly bring further shortages of components manufactured from steel. But most materials so far are in at least adequate supply.

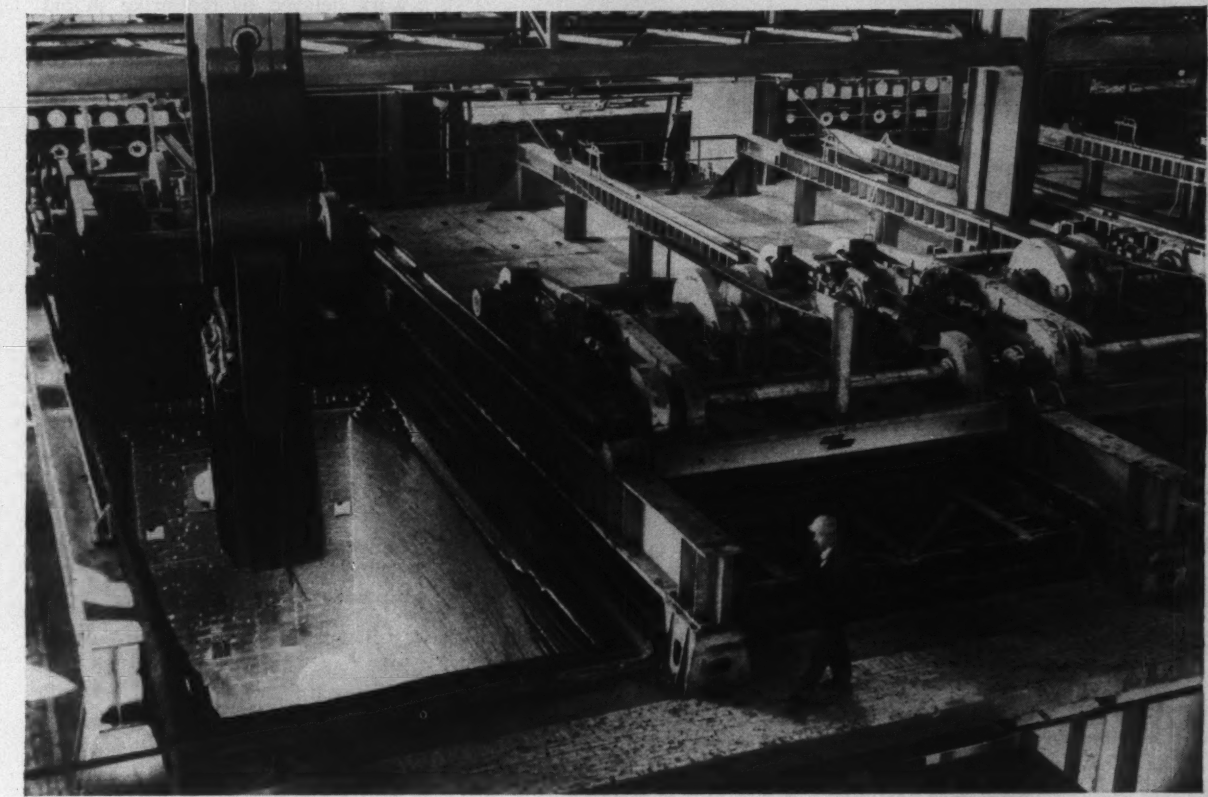
Even the long copper strike has not yet caused any great hardship as far as copper products are concerned, Mr. Ruediger says. A shortage of copper items may develop at a future date, but so far supplies are ample. The threat of a shortage appears greatest for raw copper, and price increases in the near future seem most likely for copper and copper products, NAPA members feel.

Most Wanted List—Most-wanted steel items in first half, in addition to galvanized and cold-rolled sheets, will be wide plate, light bar-size angles, lightweight wide-flange beams and tinplate. Just how critical these items will be is uncertain, probably will not be fully known until the strike picture clears up.

Tight money, often mentioned as a threat to inventory and purchasing policies, may be overrated as a villain, Mr. Ruediger says:

"In my opinion, tight money will not seriously affect the inventory and purchasing policies of the metalworking industry next year. Since we are talking about tight money, it seems to me that the present interest rates are really what would have been termed more normal than any we have had for a long period of years, in that interest rates have had a tendency to lag and have not yet bounced back to a normal level since the 1930's."

HAGAN COMBUSTION CONTROL



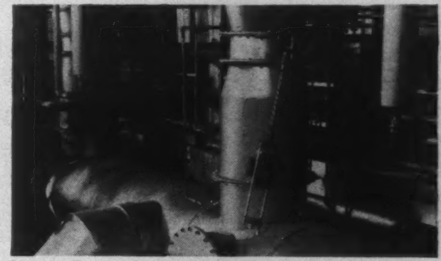
Part of the twelve new pits at Lukens Steel Company. Equipped with Hagan automatic combustion control, these pits will handle ingots up to 75 tons in size; each pit is capable of holding 200 tons.

for twelve new soaking pits at Lukens Steel

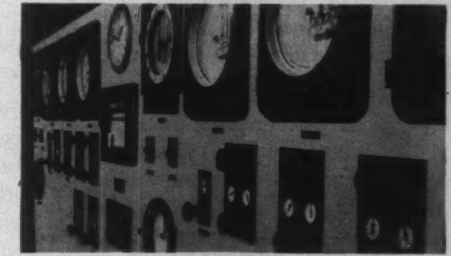
At Lukens Steel Company, the nation's leading specialist in steel plate, twelve massive new soaking pits are designed to heat record-size, 75-ton ingots to 2350°F. Since most of the steels to be treated in these pits will be various types of alloys, the control of furnace atmosphere is critical. Hagan fuel-air ratio control maintains excess air at the required level so that each alloy receives the conditions necessary for its optimum heating. The wide turndown range possible with Hagan equipment assures that pit atmospheres will be held accurately during the entire soaking cycle.

These new pit controls, a part of Lukens' $33 million expansion program, are only a portion of the Hagan systems installed at the plant. A total of 27 pits are equipped with Hagan controls, as are open hearth and sidedoor furnaces. Hagan equipment is in use in many other applications throughout the plant. Hagan has earned a reputation for reliability and low maintenance cost, and operators like the good housekeeping possible with pneumatic controls.

A Hagan engineer will be glad to discuss metallurgical furnace controls to fit your particular requirements. Write or phone the address below.



Hagan Power Positioner operating combustion air damper. Specially designed for high temperature work, this model is equipped with silicone piston packing and receiver diaphragms.



Section of soaking pit control panel. Hagan Ring Balance meters' wide turndown range permits accurate recording of flows as low as 6% of full scale.

HAGAN CHEMICALS & CONTROLS, INC.
DIVISIONS: CALGON COMPANY, HALL LABORATORIES

HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Flumendosa No. 13, Milano, Italy

Steel Capacity Hits New Record

Steelmakers in the U. S. now have an annual capacity totaling 148.5 million tons.

Electric furnace tonnage made the biggest gain during the past year.

▪ America's steelmaking capacity has increased again, for the 13th year in a row.

Total annual steel capacity as of Jan. 1, 1960 is 148,570,970 tons, according to the American Iron and Steel Institute. This is a gain of 937,300 tons over previous figures.

The new capacity is 62 pct greater than it was when World War II ended. It is also more than 31 million tons above the industry's greatest annual production, the record 117 million tons poured in 1955.

More Electric Furnaces — The largest gain during 1959 came in electric furnace capacity. Capacity of electric furnaces is now 14.3 million net tons. This is an advance of more than 900,000 tons over previous totals. Electric furnaces now account for 9.7 pct of total steel capacity.

Openhearth furnace capacity rose last year by 93,250 tons. Combined capacity of openhearths is now 126.6 million net tons a year, more than 85 pct of total annual capacity.

More Oxygen Steel — Facilities for oxygen steelmaking increased 124,240 tons during 1959. Basic oxygen process capacity now totals 4,157,400 tons annually, against 4,033,160 tons when last year started.

During 1959, gains were made in blast furnace capacity, but coke oven capacity declined. Blast furnace capacity rose by 1.8 million net tons to a new total of 96.5 million net tons a year. However, coke oven capacity dropped from 73.0 million tons to 72.3 million net tons a year.

Sheet and Strip — As the steel strike ends, mills are booked through June on flat-rolled products. In some cases, books are not yet open officially for the second quarter. But heavy demand should fill them up quickly once they are opened.

Cold-rolled and galvanized sheet remain the most critical products. But automakers are putting heavy pressure on strip mills for delivery. Buyers of flat-rolled products are on a quota basis at the mills. One sheet mill man says, "Customers are still buying on a hand-to-mouth basis." Service centers are also having trouble building inventories.

Plates and Shapes—Heavy steel producers feel strike settlement may release some steel orders for new plants and equipment. Construction work delayed by the strike should now move ahead. This, together with preparations for the spring building season, should step-up the market for plates and shapes.

Right now, one **Eastern** producer of structurals has orders booked through the first quarter. Another mill is quoting standard structurals for 10 to 12 week delivery. Wide flange beams are listed at 17 to 20 weeks.

Bar—Hot-rolled bar mills in the **Midwest** have run into some operating difficulties. This has cut down on their output and increased carryovers. As yet cold finishers haven't been hurt by these delays. But they are concerned about the future. Some cold drawers are trying without much success, to line up hot-rolled bars from other areas.

Tinplate—Mill shipments of tinplate are running close to capacity. It appears canmakers will get only about 3.5 million tons of tinplate in the first half. This will not provide any real inventory cushion. Not until the second half will the can companies have a chance to rebuild inventories. This belated buildup should keep tinplate demand strong in the second half. As a result, tinplate output for the year could hit a record 7 million tons.

Service Centers—Business at the warehouses should rebound this month. December sales topped most months in 1959, but did not hit the highs of October or November. The service centers are having difficulty increasing stocks. Sheet products are the worst off. There are also holes in bar inventories. Light plate is in good demand, but short supply. Only in structurals are the service centers in fairly good condition.

Wire—Wire mills, after a slow start, are improving deliveries. Some, however, are operating with heavy order carryovers. Manufacturers' wire is expected to run at capacity levels through the first half.

PURCHASING AGENT'S CHECKLIST

Business Outlook—1960

Ten-year forecast shows what to expect for metalworking in the Soaring 60's. **starts on P. 161**

Survey of leading metalworking executives shows them optimistic about sales and profits in 1960. Prices expected to go up only slightly. **begins on P. 199**

Individual reports for each industry **starts on P. 204**

COMPARISON OF PRICES

(Effective Jan. 5, 1960)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (*).

	Jan. 5 1960	Dec. 29 1959	Dec. 8 1959	Jan. 6 1959
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.30
Plates, wrought iron	13.55	13.55	13.55	13.55
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.65
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.35
Special coated mfg. ternes	9.90	9.90	9.90	9.90
Bars and Shapes: (per pound)				
Merchants bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.75
Light rails	6.725	6.725	6.725	6.725
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.196¢

	Jan. 5 1960	Dec. 29 1959	Dec. 8 1959	Jan. 6 1959
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.57
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.07
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.41
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.50*	$42.50	$42.50	$43.50
No. 1 steel, Phila. area	41.50	41.50	44.50	34.50
No. 1 steel, Chicago	39.50	39.50	40.50	42.50
No. 1 bundles, Detroit	38.50*	37.50	40.50	36.50
Low phos., Youngstown	48.50	48.50	49.50	45.50
No. 1 mach'y cast, Pittsburgh	55.50	55.50	55.50	50.50
No. 1 mach'y cast, Phila.	54.50	54.50	54.50	48.50
No. 1 mach'y cast, Chicago	60.50	60.50	60.50	53.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$41.50*	$41.17	$42.50	$40.17
No. 2 bundles	27.83	27.83	28.83	29.33
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75-15.50	$14.75-15.50	$14.75-15.50	$14.50
Foundry coke, prompt	18.50	18.50	18.50	18-18.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	33.00	33.00	33.00	29.00
Copper, Lake, Conn.	33.00	33.00	33.00	29.00
Tin, Straits, N. Y.	99.375†	98.50	99.00	98.25
Zinc, East St. Louis	12.50	12.50	12.50	11.50
Lead, St. Louis	11.80	11.80	12.80	12.80
Aluminum, virgin ingot	28.10	28.10	26.80	26.80
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ** Revised.

Finished Steel Composite
Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite
Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites
Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Steel Settlement Brightens Outlook

News of a new steel labor contract brought a new wave of optimism to the market.

Scrap purchases, limited or deferred during the period of uncertainty, are expected to increase.

▪ A wave of guarded optimism swept over the scrap market this week as news spread of the settlement of the lengthy steel labor negotiations.

While there were no significant mill purchases immediately following word of the new steel industry contract, the feeling was widespread that mills would shortly place tonnage orders for scrap.

Since steelmills resumed operations under the Taft-Hartley injunction they have been consuming scrap at a faster rate than it was being purchased.

At any rate, now that mills are assured uninterrupted operations at a high rate for some time to come, they should step up scrap purchases. Scrap prices will likely increase along with purchases, but mills have indicated a readiness to resist runaway prices.

Pittsburgh — News of the steel labor settlement brought price increases here as mills stepped up efforts to buy scrap. Immediately following the settlement, brokers began receiving feelers from the mills. Scrap men say interest is too widespread to permit quiet buying or buying at low prices. However, it is not clear how far consumers will go in supporting a stronger market. The prospect of strong demand has stiffened broker resistance and raised prices of No. 1 dealer grades.

Chicago — Freezing winter weather, and a freezeup in scrap prices, keynoted a week of light trading. Out-of-area mills continue to take scrap from Chicago at prices over the local level, but local mills continue to buy small quantities at existing levels. Factory bundle prices stiffened slightly on new orders, and railroad grades and turnings are being held up in anticipation of price advances later in this quarter.

Philadelphia—Word of the steel labor settlement brought an immediate reaction from scrap brokers and dealers: "Our whole outlook has changed from pessimism to optimism." Only a few disagree with this view. However, there has been little immediate change in activity as the market continues easy, awaiting the next move by steel mills.

New York—Cheered by news of the end of the steel strike, the trade adopted a "wait and see" attitude. Dealers and brokers firmly expect new orders in the near future and stress that prices must go up to draw out material. But so far, prices are unchanged.

Detroit—Settlement of the steel strike should have a buoyant effect on the market. How great the effect will be in terms of dollars is hard to tell right now. Dealers scrap still has no takers. Mills can continue to run for a while on inventories plus scrap bought from January industrial lists.

Cleveland—A limited amount of new buying in the Valley confirmed some prices and advanced others. Two Valley mills bought industrial grades at $49, the same as last month. Volume was off from recent months and consumers showed no interest in heavy melting scrap for openhearths. Selective buying had the effect of moving up prices for No. 1 dealer bundles and No. 1 dealer busheling.

St. Louis — The scrap market again was dull with movement near a standstill, but settlement of steel labor negotiations is expected to bring new activity to the market.

Cincinnati—Prices are unchanged here as mills and brokers are trying to gage the effects of the steel settlement. New prices for one mill are the same as for last month, but there hasn't been time enough to tell what the reaction of dealers will be. General feeling is that a stronger market can be expected.

Birmingham — Movement of scrap is moderate and prices are steady. A large local electric furnace mill released shipments held up since early in December. Dealers and brokers say the market has temporarily leveled off at present prices.

Buffalo—Dealers now await mill action in the wake of the steel settlement. Sales of No. 2 grades were made last week at quoted prices. They were for delivery in the first two weeks of this month.

Boston—The trade is waiting for post - settlement developments. Meanwhile, prices remain unchanged and activity in the export market continues at a slow pace.

West Coast—No. 2 heavy melting steel can't find a home in Los Angeles. Exporting remains the only bright spot. All told, about 100,000 tons of scrap will leave West Coast ports in January.

Houston — The market here is quiet, although there is a flurry of export activity. However, exporters are quoting prices at $2 less per ton than their recent prices.

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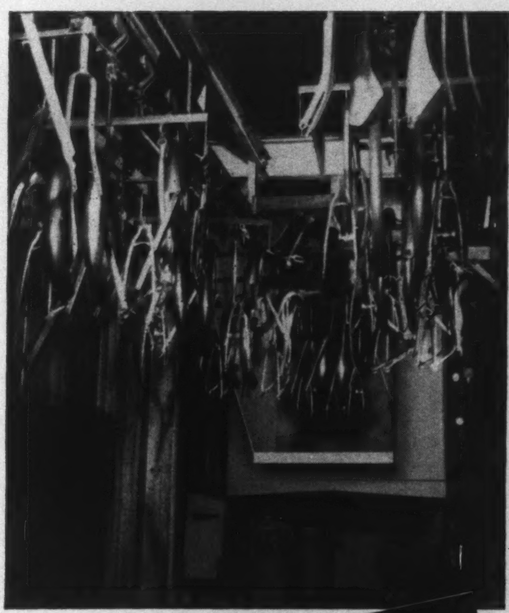

Over a period of twenty-three years the Mahon company has worked in close cooperation with Arnold, Schwinn & Co., manufacturers of famous Schwinn Bicycles, in developing finishing equipment which now produces what is acknowledged the highest quality finish, the most durable finish, and the finest appearing finish in the industry.

The three Finishing Systems installed by Mahon in the past twenty-three years have saved Arnold, Schwinn & Co. over 10,000 Sq. Ft. of valuable manufacturing floor space inside the company's two-story plant. In the first Finishing System, installed in **1936**, only the Spray Booths were located inside the plant; other units, including two Finish Baking Ovens together with Heating Equipment, Recirculating Fans, etc., were housed on the roof.

In **1950**, another complete self-housed Prime-Coat Finishing System, shown above, was installed in its entirety on the roof—the design being a two-level arrangement with Dry-Off Oven, Finish Baking Oven and Heating Equipment Room on the upper level. This System handles Cleaning, Rust Proofing and Prime Coating of all parts produced which receive their 2nd and 3rd or final coat in the other two Finishing Systems.

In **1956**, a third Finishing System was installed with 2nd Coat Finish Baking Oven, Cooling Area, 3rd or Final Coat Finish Baking Oven and Heating Equipment Room located on the Roof. Electrostatic Spray Booths for this System were located on the second floor of the plant directly below.

When you consider buying a new finishing system, or any unit of finishing or processing equipment, you, too, will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the initial planning and engineering which plays such an important role in the ultimate operating efficiency of specially designed equipment of this type.

See Sweet's Plant Engineering File for Information and Representative Installations, or Write for Catalogue A-660

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MAHON

SCRAP PRICES

(Effective Jan. 5, 1960)

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	45.00 to 46.00
No. 1 factory bundles	50.00 to 51.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	25.00 to 26.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	29.00 to 30.00
Low phos. punch'gs plate	52.00 to 53.00
Heavy turnings	37.00 to 38.00
No. 1 RR hvy. melting	49.00 to 50.00
Scrap rails, random lgth.	60.00 to 61.00
Rails 2 ft and under	66.00 to 67.00
RR specialties	57.00 to 58.00
No. 1 machinery cast.	55.00 to 56.00
Cupola cast.	51.00 to 52.00
Heavy breakable cast.	49.00 to 50.00
Stainless	
18-8 bundles and solids	235.00 to 240.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	60.00 to 65.00

Chicago

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 1 factory bundles	45.00 to 46.00
No. 2 bundles	26.00 to 27.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. forge crops	54.00 to 55.00
Low phos. punch'gs plate, ¼ in. and heavier	51.00 to 52.00
Low phos. 2 ft and under	49.00 to 50.00
No. 1 RR hvy. melting	45.00 to 46.00
Scrap rails, random lgth.	56.00 to 57.00
Rerolling rails	63.00 to 64.00
Rails 2 ft and under	62.00 to 63.00
Angles and splice bars	54.00 to 55.00
RR steel car axles	59.00 to 60.00
RR couplers and knuckles	51.00 to 52.00
No. 1 machinery cast.	60.00 to 61.00
Cupola cast.	54.00 to 55.00
Cast iron wheels	48.00 to 49.00
Malleable	62.00 to 63.00
Stove plate	50.00 to 51.00
Steel car wheels	51.00 to 52.00
Stainless	
18-8 bundles and solids	220.00 to 225.00
18-8 turnings	120.00 to 125.00
430 bundles and solids	120.00 to 125.00
430 turnings	60.00 to 65.00

Philadelphia Area

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	45.00 to 47.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	45.00 to 47.00
Machine shop turn.	22.00 to 23.00
Mixed bor. short turn.	23.00 to 24.00
Cast iron borings	22.00 to 23.00
Shoveling turnings	26.00 to 27.00
Clean cast. chem. borings	27.00 to 28.00
Low phos. 5 ft and under	48.00 to 49.00
Low phos. 2 ft punch'gs	50.00 to 51.00
Elec. furnace bundles	48.00 to 49.00
Heavy turnings	34.00 to 35.00
RR specialties	50.00 to 51.00
Rails, 18 in. and under	67.00 to 68.00
Cupola cast.	42.00 to 43.00
Heavy breakable cast.	46.00 to 47.00
Cast iron car wheels	50.00 to 51.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	54.00 to 55.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	20.00 to 21.00
Low phos. 18 in. and under	48.00 to 49.00
Rails, random length	54.00 to 55.00
Rails, 18 in. and under	62.00 to 63.00
No. 1 cupola cast.	49.00 to 50.00
Hvy. breakable cast.	44.00 to 45.00
Drop broken cast.	59.00 to 60.00

Youngstown

No. 1 hvy. melting	$45.50 to $46.50
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	46.50 to 47.50
No. 2 bundles	29.00 to 30.00
Machine shop turn.	20.50 to 21.50
Shoveling turnings	25.50 to 26.50
Low phos. plate	48.00 to 49.00

Cleveland

No. 1 hvy. melting	$42.00 to $43.00
No. 2 hvy. melting	34.50 to 35.50
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	45.50 to 46.50
No. 2 bundles	25.50 to 26.50
No. 1 busheling	43.00 to 44.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	23.00 to 24.00
Cut structural & plates, 2 ft & under	48.50 to 49.50
Drop forge flashings	42.00 to 43.00
Low phos. punch'gs plate	44.00 to 45.00
Foundry steel, 2 ft & under	42.00 to 43.00
No. 1 RR hvy. melting	45.50 to 46.50
Rails 2 ft and under	65.00 to 66.00
Rails 18 in. and under	66.00 to 67.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	**60.00 to 61.00**
No. 1 machinery cast.	56.00 to 57.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	100.00 to 110.00
430 bundles	115.00 to 120.00

Buffalo

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	26.00 to 27.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	20.00 to 21.00
Low phos. plate	44.00 to 45.00
Structurals and plate, 2 ft and under	44.00 to 45.00
Scrap rails, random lgth.	42.00 to 43.00
Rails 2 ft and under	52.00 to 53.00
No. 1 machinery cast.	53.00 to 54.00
No. 1 cupola cast.	49.00 to 50.00

St. Louis

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	42.00 to 43.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	24.00 to 25.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails, random lengths	52.00 to 53.00
Rails, 18 in. and under	57.00 to 58.00
Angles and splice bars	50.00 to 51.00
RR specialties	49.00 to 50.00
Cupola cast.	51.00 to 52.00
Heavy breakable cast.	45.00 to 46.00
Stove plate	44.50 to 45.50
Cast iron car wheels	48.50 to 49.50
Rerolling rails	60.00 to 61.00
Unstripped motor blocks	45.00 to 46.00

Birmingham

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	23.00 to 24.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	40.00 to 41.00
Elec. furnace, 3 ft & under	38.00 to 39.00
Bar crops and plate	44.00 to 45.00
Structural and plate, 2 ft.	43.00 to 44.00
No. 1 RR hvy. melting	36.00 to 37.00
Scrap rails, random lgth.	52.00 to 53.00
Rails, 18 in. and under	56.00 to 57.00
Angles and splice bars	49.00 to 50.00
Rerolling rails	61.00 to 62.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	53.00 to 54.00
Cast iron car wheels	44.00 to 45.00
Unstripped motor blocks	42.00 to 43.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	28.00 to 29.00
No. 2 dealer bundles	19.00 to 20.00
Machine shop turnings	10.00 to 11.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	15.00 to 16.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	39.00 to 40.00
Mixed yard cast.	37.00 to 38.00
Heavy breakable cast.	37.00 to 38.00
Stainless	
18-8 prepared solids	200.00 to 205.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	38.00 to 39.00
No. 2 bundles	20.00 to 21.00
No. 1 bushelings	36.00 to 37.00
Drop forge flashings	36.00 to 37.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	21.00 to 22.00
Heavy breakable cast.	40.00 to 41.00
Mixed cupola cast.	46.00 to 47.00
Automotive cast.	51.00 to 52.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	80.00 to 85.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	34.00 to 35.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	34.00 to 35.00
Machine shop turn.	11.00 to 12.00
Shoveling turnings	15.00 to 16.00
Clean cast. chem. borings	15.50 to 16.50
No. 1 machinery cast.	41.00 to 42.00
Mixed cupola cast.	37.00 to 38.00
Heavy breakable cast.	35.00 to 36.00

San Francisco

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	36.00
No. 1 dealer bundles	36.00
No. 2 bundles	22.00
Machine shop turn.	$17.00 to 19.00
Cast iron borings	17.00 to 19.00
No. 1 cupola cast.	47.00

Los Angeles

No. 1 hvy. melting	$41.00
No. 2 hvy. melting	39.00
No. 1 dealer bundles	38.00
No. 2 bundles	20.00
Machine shop turn.	$18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Elec. furn. 1 ft and under (foundry)	49.00 to 50.00
No. 1 cupola cast.	47.00 to 48.00

Seattle

No. 1 hvy. melting	$35.00
No. 2 hvy. melting	33.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$32.25
No. 2 hvy. melting	28.25
No. 1 dealer bundles	32.25
No. 2 bundles	24.00
Mixed steel scrap	24.25
Bush., new fact., prep'd	32.25
Bush., new fact., unprep'd	26.25
Machine shop turn.	14.00
Short steel turn.	17.00
Mixed bor. and turn.	13.00
Cast scrap	$46.50 to 48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.00
No. 2 hvy. melting	31.00
No. 2 bundles	20.00
Machine shop turn.	16.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$48.00 to 49.00
Unstripped motor blocks	37.50 to 38.50
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	34.00 to 35.00

You specify the scrap you want... we'll fill the order

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What to Expect In Copper

Fabricators' business will be about five pct better in 1960 than last year.

But big change: There'll be enough metal to go around. This will stabilize the price.

▪ Copper industry people pretty well agree fabricating business this year will be up about five pct.

Considering that business in 1959 topped 1958 by 20 pct overall, this is a bright outlook.

Statistics at Work—Mine output will come close to 1.16 million tons, estimates the Copper and Brass Research Assn. And refinery production will be about 1.5 million tons. Neither of these can be compared with 1959 since both mine and refinery output was at record levels in the first half, then 73 pct and 68 pct respectively struck in the last half.

But these statistics don't tell where to look for the really important developments in copper this year.

In Good Supply—Most important —There'll be enough metal to go around. Hedging prevented most users from being hurt seriously by the strikes. But pipelines are empty. While they are filling up, schedules may be a bit uncomfortable. But this will start easing by the second quarter.

Stemming directly from this, the price of producers' copper has rarely looked this stable. There are no specific threats of any likely increase. When pipelines are full again the market will soften some, and the price might even drop slightly.

Market Minded—In an important development, six major copper producers—American Metal Climax Inc., American Smelting and Refining Co., Anaconda Co., International Nickel Co., Kennecott Copper Corp., and Phelps Dodge Corp., have formed the Copper Products Development Assn.

It is the latest sign that the copper industry is becoming marketing minded. The new association will feature a market development committee to advise the technical people on the practicality of projects, and to decide how to best use technical advances and new products. The new group will listen to anyone with any ideas for any new copper products.

Service Promised—The word on the bountiful copper supply comes right from the top. Anaconda's chairman, Clyde E. Weed believes the industry is in "a better position to serve its customers than ever before in history."

How important is adequate supply to the industry?

Says one spokesman, "Our men have a dual selling problem. They must not only sell copper for its intrinsic value, but its value plus the reassurance that it will continue to be in totally adequate supply for the future."

Market Outlook—Major markets in 1960, as in other years will be automotive and construction.

Cabra estimates 6.5 million autos will be made in 1960. William Meissner, director of the Copper Div., Business and Defense Services Administration, figures 6.7 million. Cabra figures "the average car consumes 35 to 40 lb of copper metals, exclusive of accessories."

Better than 1959—T. E. Veltfort, managing director of Cabra, reports that while tight money has somewhat restricted housing starts, the figure should hit 1.1 to 1.2 million this year. Mr. Meissner leans toward the high side in his estimate. Mr. Veltfort figures "a high percentage of these" will use to 250 lb of copper tube for plumbing.

The whole thing adds up to about two billion lb of brass mill products shipped this year. This would top 1959 by 100 million lb, and 1958 by 500 million lb.

Tin prices for the week: Dec. 30 —98.875; Dec. 31—98.875; Jan. 1 —holiday; Jan. 4—99.375; Jan. 5 —99.375.*
*Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in DECEMBER based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	33.00
Copper, Lake	33.00
Straits Tin, New York	99.14
Zinc, E. St. Louis	12.50
Lead, St. Louis	12.32
Aluminum ingot	27.39

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	26.00	24.70	12/17/59
Aluminum Ingot	28.10	26.80	12/17/59
Copper (E)	33.00	30-33	11/12/59
Copper (CS)	35.00	33.00	12/23/59
Copper (L)	33.00	31.50	11/6/59
Lead, St. L	11.80	12.30	12/21/59
Lead, N. Y.	12.00	12.50	12/21/59
Magnesium Ingot	36.00	34.50	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/58
Titanium sponge	150-160	162-182	8/1/59
Zinc, E. St. L.	12.50	12.5-13	11/2/59
Zinc, N. Y.	13.00	13-13.5	11/2/59

ALUMINUM: 99% Ingot **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig Velasco, Tex. **NICKEL:** Port Colborne, Canada. **ZINC:** prime western. **TIN:** See above; Other primary prices, pg. 382.

"I never knew BRISTOL BRASS makes phosphor bronze, too"

This chance remark gave us a feeling that we may have been keeping a secret unintentionally. So for the public record: Bristol makes *everything* that can be made from copper, and makes it in that special way called "Bristol-Fashion" . . . *including phosphor bronze that nobody can top.*

In fact, our customers tell us that Bristol Phosphor Bronze is consistently dependable in its surface smoothness and hardness . . . in its resistance to fatigue and corrosion . . . and in its excellent behavior under forming and machining. They don't tell us in those exact words, but in the form of repeat orders, year after year.

Yes, Bristol makes phosphor bronze strip in all standard sizes. How are *you* fixed? Write, or phone Bristol, Connecticut, Ludlow 2-3161.

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"Bristol-Fashion" means **Brass at its Best**

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250- 3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand, Grade	......	67.9	69.0	77.9	103.1
AZ31B Spec.	......	93.3	96.9	108.7	171.3
Tread Plate	......	70.6	71.7	......	......
Tooling Plate	73.0	......	......	......	......

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting)	37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting)	40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	57.13	....	54.86	58.32
Brass, Yellow	50.57	50.86	50.26	54.23
Brass, Low	53.53	53.82	53.22	57.09
Brass, R L	54.58	54.87	54.27	58.14
Brass, Naval	55.12	....	48.68	58.78
Munts Metal	53.20	....	48.26	....
Comm. Bs.	56.17	56.46	55.86	59.48
Mang. Bs.	58.86	....	52.21	....
Phos. Bs. 5%	77.44	....	78.19	....

Free Cutting Brass Rod	36.06

TITANIUM

(Base prices f.o.b. mill)

Sheet and strip, commercially pure, $7.25-$8.50; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$6.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.55-$6.05; alloy, $7.55-$9.50; Bar, HR or forged, commercially pure, $4.00-$4.50; alloy, $4.00-$6.25; billets, HR, commercially pure, $3.20-$3.70; alloy, $3.20-$4.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.	29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be	$74.75
Beryllium copper, per lb conta'd Be	$43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading	$71.50
Bismuth, ton lots	$ 2.25
Cadmium, del'd	$ 1.40
Calcium, 99.9% small lots	$ 4.55
Chromium, 99.8% metallic base	$ 1.31
Cobalt, 97-99% (per lb)	$1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined	33.30 to 42.00
Gold, U. S. Treas., per troy oz.	$35.00
Indium, 99.9%, dollars per troy oz.	$ 2.25
Iridium, dollars per troy oz.	$75 to $85
Lithium, 98%	$11.00 to $14.00
Magnesium sticks, 10,000 lb.	57.00
Mercury, dollars per 76-lb flask f.o.b. New York	$212 to $214
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel	69.60
Palladium, dollars per troy oz.	$22 to $24
Platinum, dollars per troy oz.	$77 to $80
Rhodium	$120.00 to $125.00
Silver ingots (¢ per troy oz.)	91.375
Thorium, per kg.	$43.00
Vanadium	$ 3.45
Zirconium sponge	$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot	
No. 115	30.75
No. 120	29.25
No. 123	28.75
80-10-10 ingot	
No. 305	35.25
No. 315	33.00
88-10-2 ingot	
No. 210	44.00
No. 215	40.75
No. 245	36.00
Yellow ingot	
No. 405	24.75
Manganese bronze	
No. 421	29.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper max.	26.25-26.50
0.60 copper max.	26.00-26.25
Piston alloys (No. 132 type)	28.00-29.00
No. 12 alum. (No. 2 grade)	24.75-25.25
108 alloy	25.25-25.75
195 alloy	27.75-28.75
13 alloy (0.60 copper max.)	26.00-26.25
AXS-679 (1 pct zinc)	25.00-26.00

(Effective Jan. 4, 1960)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½%	25.25-26.25
Grade 2—92-95%	24.00-25.00
Grade 3—90-92%	23.00-24.00
Grade 4—85-90%	22.50-23.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	29	28¼
Yellow brass	22¼	20¼
Red brass	25¾	25
Comm. bronze	26¼	26
Mang. bronze	20¾	20
Free cutting rod ends.	21¼	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	29½
No. 2 copper wire	26
Light copper	23¾
*Refinery brass	24¼
Copper bearing material	23¼

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	29½
No. 2 copper wire	25½
Light copper	23½
No. 1 composition	23
No. 1 comp. turnings	22¼
Hvy. yellow brass solids	16¾
Brass pipe	16¼
Radiators	18
Aluminum	
Mixed old cast.	14 —15
Mixed new clips	16½—17
Mixed turnings, dry	14½—15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	25½—26
No. 2 copper wire	22½—23
Light copper	21 —21½
Auto radiators (unsweated)	14½—15
No. 1 composition	18½—19
No. 1 composition turnings	17 —17½
Cocks and faucets	15 —15½
Clean heavy yellow brass	13 —13½
Brass pipe	15 —15½
New soft brass clippings	15¼—15¾
No. 1 brass rod turnings	12½—13

Aluminum

Alum. pistons and struts	7½— 8
Aluminum crankcase	11¼—11¾
1100 (2s) aluminum clippings	15 —15½
Old sheet and utensils	11¼—11¾
Borings and turnings	7 — 7½
Industrial castings	11¼—11¾
2020 (24S) clippings	12½—13

Zinc

New zinc clippings	6¼— 6¾
Old zinc	4¼— 4¾
Zinc routings	3 — 3¼
Old die cast scrap	2½— 2¾

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	20-23
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	8¾— 9¼
Battery plates (dry)	4¼— 4½
Batteries, acid free	2½— 2¾

Miscellaneous

Block tin	77 —78
No. 1 pewter	59 —60
Auto babbitt	40 —41
Mixed common babbitt	9¾—10¼
Solder joints	14 —14½
Siphon tops	42
Small foundry type	10¼—10¾
Monotype	10¼—10¾
Lino. and stereotype	9¼— 9¾
Electrotype	7¾— 8¼
Hand picked type shells	6 — 6½
Lino. and stereo. dross	2¾— 3¼
Electro dross	2¾— 3¼

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1; C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W5*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Jan. 4, 1960)

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro** 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 A2	6.325 A2				7.575 A2						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 B3			
	Fairless, Pa.	5.15 U1	6.325 U1				7.575 U1	9.325 U1			$10.50 U1	$9.20 U1	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	$10.40 B3	$9.10 B3	
	Worcester, Mass.									6.70 A5			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 L1			
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7						
	Canton-Massillon, Dover, Ohio			6.875 R1, R3									
	Chicago, Joliet, Ill.	5.10 W8, A1					7.525 U1, W8			6.40 A5, R3,W8			
	Sterling, Ill.									6.50 N4, K2			
	Cleveland, Ohio	5.10 R3, J3	6.275 R3, J3	7.65 R3*	6.775 R3		7.525 R3, J3	9.275 R3, J3		6.40 A5			
	Detroit, Mich.	5.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3					
	Newport, Ky.	5.10 A9	6.275 A9										
	Gary, Ind. Harbor, Indiana	5.10 U1, I3,Y1	6.275 U1, I3,Y1	6.875 U1, I3	6.775 U1, I3,Y1	7.225 U1	7.525 U1, Y1,I3	9.275 U1, Y1		6.40 Y1	$10.40 U1, Y1	$9.10 I3, U1,Y1	7.85 U1, Y1
	Granite City, Ill.	5.20 G2	6.375 G2	6.975 G2								$9.20 G2	7.95 G2
	Kokomo, Ind.			6.975 C9						6.50 C9			
	Mansfield, Ohio	5.10 E2	6.275 E2			7.225 E2							
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7							
	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	6.775 S1	7.225 S1*, R3	7.525 R3, S1	9.275 R3,				$9.10 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 U1, J3,P6	6.275 U1, J3,P6	6.875 U1, J3 7.50 E3*	6.775 U1		7.525 U1, J3	9.275 U1, J3	10.025 U1, J3	6.40 A5, J3,P6	$10.40 U1, J3	$9.10 U1, J3	7.85 U1, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7							6.40 P7			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 W3, W5	6.275 W3, F3,W5	6.875 W3, W5 7.50 W3*		7.225 W3, W5	7.525 W3	9.275 W3			$10.40 W5, W3	$9.10 W5, W3	7.85 W5
	Youngstown, Ohio	5.10 U1, Y1	6.275 Y1	7.50 J3*	6.775 Y1		7.525 Y1	9.275 Y1		6.40 Y1			
WEST	Fontana, Cal.	5.825 K1	7.40 K1				8.25 K1	10.40 K1			$11.05 K1	$9.75 K1	
	Geneva, Utah	5.20 C7											
	Kansas City, Mo.									6.65 S2			
	Los Angeles, Torrance, Cal.									7.20 B2			
	Minnequa, Colo.									6.65 C6			
	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.20 C7	$11.05 C7	$9.75 C7	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 T2, R3	6.275 T2, R3	6.875 T2, R3	6.775 T2					6.40 T2,R3	$10.50 T2	$9.20 T2	
	Houston, Texas									6.65 S2			

* Electrogalvanized sheets.

(Effective Jan. 4, 1960)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

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		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	9.00 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				9.05 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				9.05 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher.

(Effective Jan. 4, 1960)

* Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1	Acme Steel Co., Chicago
A2	Alan Wood Steel Co., Conshohocken, Pa.
A3	Allegheny Ludlum Steel Corp., Pittsburgh
A4	American Cladmetals Co., Carnegie, Pa.
A5	American Steel & Wire Div., Cleveland
A6	Angel Nail & Chaplet Co., Cleveland
A7	Armco Steel Corp., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A9	Acme-Newport Steel Co., Newport, Ky.
A10	Alaska Steel Mills, Inc., Seattle, Wash.
B1	Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2	Bethlehem Steel Co., Pacific Coast Div.
B3	Bethlehem Steel Co., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7	A. M. Byers, Pittsburgh
B8	Braeburn Alloy Steel Corp., Braeburn, Pa.
C1	Calstrip Steel Corp., Los Angeles
C2	Carpenter Steel Co., Reading, Pa.
C4	Claymont Products Dept., Claymont, Del.
C6	Colorado Fuel & Iron Corp., Denver
C7	Columbia Geneva Steel Div., San Francisco
C8	Columbia Steel & Shafting Co., Pittsburgh
C9	Continental Steel Corp., Kokomo, Ind.
C10	Copperweld Steel Co., Pittsburgh, Pa.
C11	Crucible Steel Co. of America, Pittsburgh
C13	Cuyahoga Steel & Wire Co., Cleveland
C14	Compressed Steel Shafting Co., Readville, Mass.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Div., Birmingham
C18	Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
D1	Detroit Steel Corp., Detroit
D2	Driver, Wilbur B., Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
D4	Dickson Weatherproof Nail Co., Evanston, Ill.
E1	Eastern Stainless Steel Corp., Baltimore
E2	Empire-Reeves Steel Corp., Mansfield, O.
E3	Enamel Products & Plating Co., McKeesport, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
F2	Fitzsimons Steel Corp., Youngstown
F3	Follansbee Steel Corp., Follansbee, W. Va.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Corp., Detroit
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owenboro, Ky.
H1	Hanna Furnace Corp., Detroit
I2	Ingersoll Steel Div., New Castle, Ind.
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Iron Corp., Cleveland
J1	Jackson Iron & Steel Co., Jackson, O.
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Steel & Wire Co., Peoria
K4	Keystone Drawn Steel Co., Spring City, Pa.
L1	Laclede Steel Co., St. Louis
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
M1	Mahoning Valley Steel Co., Niles, O.
M2	McLouth Steel Corp., Detroit
M3	Mercer Tube & Mfg. Co., Sharon, Pa.
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M6	Mystic Iron Works, Everett, Mass.
M7	Milton Steel Products Div., Milton, Pa.
M8	Mill Strip Products Co., Chicago, Ill.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
N1	National Supply Co., Pittsburgh
N2	National Tube Div., Pittsburgh
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle
N7	Newman Crosby Steel Co., Pawtucket, R. I.
N8	Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9	Nelson Steel & Wire Co.
O1	Oliver Iron & Steel Co., Pittsburgh
O2	Oregon Steel Mills, Portland
P1	Page Steel & Wire Div., Monessen, Pa.
P2	Phoenix Steel Corp., Phoenixville, Pa.
P3	Pilgrim Drawn Steel Div., Plymouth, Mich.
P4	Pittsburgh Coke & Chemical Co., Pittsburgh
P6	Pittsburgh Steel Co., Pittsburgh
P7	Portsmouth Div., Detroit Steel Corp., Detroit
P8	Plymouth Steel Co., Detroit
P9	Pacific States Steel Co., Niles, Cal.
P10	Precision Drawn Steel Co., Camden, N. J.
P11	Production Steel Strip Corp., Detroit
P13	Phoenix Mfg. Co., Joliet, Ill.
P14	Pacific Tube Co.
P15	Philadelphia Steel and Wire Corp.
R1	Reeves Steel & Mfg. Div., Dover, O.
R2	Reliance Div., Eaton Mfg. Co., Massillon, O.
R3	Republic Steel Corp., Cleveland
R4	Roebling Sons Co., John A., Trenton, N. J.
R5	Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome. N. Y.
S1	Sharon Steel Corp., Sharon Pa.
S2	Sheffield Steel Div., Kansas City
S3	Shenango Furnace Co., Pittsburgh
S4	Simonds Saw and Steel Co., Fitchburg, Mass.
S5	Sweet's Steel Co., Williamsport, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S9	Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10	Seneca Steel Service, Buffalo
S11	Southern Electric Steel Co., Birmingham
S12	Sierra Drawn Steel Corp., Los Angeles, Calif.
S13	Seymour Mfg. Co., Seymour, Conn.
S14	Screw and Bolt Corp. of America, Pittsburgh, Pa.
T1	Tonawanda Iron Div., N. Tonawanda, N. Y.
T2	Tennessee Coal & Iron Div., Fairfield
T3	Tennessee Products & Chem. Corp., Nashville
T4	Thomas Strip Div., Warren, O.
T5	Timken Steel & Tube Div., Canton, O.
T7	Texas Steel Co., Fort Worth
T8	Thompson Wire Co., Boston
U1	United States Steel Corp., Pittsburgh
U2	Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3	Ulbrich Stainless Steels, Wallingford, Conn.
U4	U. S. Pipe & Foundry Co., Birmingham
W1	Wallingford Steel Co., Wallingford, Conn.
W2	Washington Steel Corp., Washington, Pa.
W3	Weirton Steel Co., Weirton, W. Va.
W4	Wheatland Tube Co., Wheatland, Pa.
W5	Wheeling Steel Corp., Wheeling, W. Va.
W6	Wickwire Spencer Steel Div., Buffalo
W7	Wilson Steel & Wire Co., Chicago.
W8	Wisconsin Steel Div., S. Chicago, Ill.
W9	Woodward Iron Co., Woodward, Ala.
W10	Wyckoff Steel Co., Pittsburgh
W12	Wallace Barnes Steel Div., Bristol, Conn.
Y1	Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50	......	......	......	......	......	......	......	......
Youngstown *R3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	......	......	......	......	......	......	......	......
Fontana *K1*	+10.75	+26.00	+7.75	+22.00	+4.25	+17.50	+1.75	+16.75	+1.25	+15.75	+0.75	+15.25	0.75	+15.50	......	......	......	......	......	......	......	......
Pittsburgh *J3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Alton, Ill. *L1*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50	......	......	......	......	......	......	......	......
Sharon *M3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	......	......	......	......	......	......	......	......
Fairless *N2*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50	......	......	......	......	......	......	......	......
Pittsburgh *N1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Wheeling *W5*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	......	......	......	......	......	......	......	......
Wheatland *W4*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	......	......	......	......	......	......	......	......
Youngstown *Y1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Indiana Harbor *Y1*	1.25	+14.0	4.25	+10.0	7.75	+5.50	10.25	+4.75	10.75	+3.75	11.25	+3.25	12.75	+3.50	......	......	......	......	......	......	......	......
Lorain *N2*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50	......	......	......	......	......	......	......	......
Youngstown *R3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	......	......	......	......	......	......	......	......
Fairless *N2*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50	......	......	......	......	......	......	......	......
Fontana *K1*	+6.25	......	+2.25	......	0.75	......	1.25	......	1.75	......	2.25	......	2.75	......	......	......	......	......	......	......	......	......
Pittsburgh *J3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Alton, Ill. *L1*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50	......	......	......	......	......	......	......	......
Sharon *M3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	......	......	......	......	......	......	......	......
Pittsburgh *N1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Wheeling *W5*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	......	......	......	......	......	......	......	......
Wheatland *W4*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	......	......	......	......	......	......	......	......
Youngstown *Y1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Indiana Harbor *Y1*	5.75	+8.0	9.75	+4.0	12.75	0.50	13.25	+0.75	13.75	0.25	14.25	0.75	14.75	+0.50	......	......	......	......	......	......	......	......
Lorain *N2*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 12.50¢ per lb.

(Effective Jan. 4, 1960)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium..					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*)			Sheet (*I2*)
		10 pct	15 pct	20 pct	20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 44.20; 1 side, 36.80.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *S14*	.....	.....	.....	.....	.....	15.35
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.75 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Ironton, O., f.o.b.	30.50
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	32.00
Erie, Pa., f.o.b.	32.00
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	GRAPHITE Length (In.)	GRAPHITE Price	CARBON* Diam. (In.)	CARBON* Length (In.)	CARBON* Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

	Carloads per 1000
Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

	Per net ton
Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

F.o.b. bulk, producing points in:	*Per net ton*
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails	Woven Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3****	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	...	...	.....	9.00	9.55*
Chicago *N4***	173	190	177	212	196	9.00	9.70
Chicago *R3*	.....	.....	...	...	.....	9.00	9.55
Cleveland *A6*	.....	.....	...	...	.....	.....	.....
Cleveland *A5*	.....	.....	...	...	.....	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	...	...	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	177	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	...	...	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	...	...	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	...	...	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	.....	.....	...	236	.....	9.95	10.50†
SparrowsPt. *B3***	175	.....	...	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	...	...	.....	8.65	9.20
Worcester *A5*	179	.....	...	...	.....	9.30	9.85
Williamsport *S5*	.....	.....	...	...	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Chicago	.....	.....	.....	15.60	.....
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
National Tube	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
Pittsburgh Steel	2	13	40.28	47.21	......
	2½	12	54.23	63.57	......
	3	12	62.62	73.40	......
	3½	11	73.11	85.70	......
	4	10	97.08	113.80	......

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.50
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	48.25
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

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* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1⅛" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

C. P. Hex, reg. & hvy.

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

Hot Galv. Hex Nuts (All Types)

¾ in. and smaller	41

Semi-finished Hex Nuts

¾ in. or smaller	62
¾ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished

⅝ in. and smaller	65

Rivets	Base per 100 lb
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

Cap Screws *Discount (Packages)*

Full Finished H. C. Heat Treat

New std. hex head, packaged	Full Case	
⅝" diam. and smaller x 6" and shorter	54	42
¾", ⅞", and 1" diam. x 6" and shorter	38	23
⅝" diam. and smaller x longer than 6"	..	..
¾", ⅞", and 1" diam. x longer than 6"	..	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Quantity	Discount Mach. Screws	Discount Stove Bolts
Cartons		60	60
Bulk			
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Discount Square
In Cartons		16	19
In Bulk			
⅜" diam. & smaller	25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	38.50
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	18.75
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium, 5000 lb	1.30

Tin, ball anodes $1.05 per lb (approx.).

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.70
(Philadelphia price 25.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24	......	......	......	......
Baltimore**	$.10	9.90	10.10	10.16	11.55	10.00	10.65	10.15	11.90	17.48	16.48	21.58	20.83
Birmingham**		9.43	10.20	10.46	10.91	9.79	10.00	9.59	13.14	16.76	......	......	......
Boston**	.10	10.52	11.27	11.87	12.17	10.42	10.72	10.34	13.45	17.69	16.69	21.79	21.04
Buffalo**	.15	9.80	10.50	11.40	11.30	10.25	10.40	9.90	11.60	17.45	16.45	21.55	20.80
Chicago**	.15	8.69	10.35	11.10	10.35	8.62	9.16	8.79	10.80	17.10	16.10	19.70	20.45
Cincinnati**	.15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68	17.42	16.42	21.52	20.77
Cleveland**	.15	8.69[1]	9.89	11.09	10.47	8.88	9.67	8.90	11.40	17.21	16.21	21.31	20.56
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	......	......	......	20.84
Detroit**	.15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	17.38	16.38	21.48	21.03
Houston**		9.65	9.65	......	10.85	9.65	9.35	8.90	13.10	17.50	16.55	21.55	20.85
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**		9.95[1]	11.55	12.20	11.55	10.00	10.00	9.10	14.20	18.30	16.45	21.30	20.80
Memphis	.15	8.55	9.80	......	8.60	8.93	9.01	8.97	12.11	......	......	......	......
Milwaukee**	.15	8.83	10.49	11.24	10.49	8.76	9.30	8.93	11.04	17.24	15.34	21.24	19.09
New York	.10	9.27	10.59	11.45	9.74	9.87	9.84	10.09	13.35	16.16	15.60	20.10	19.35
Norfolk	.20	8.20	......	......	8.90	8.65	9.20	8.90	10.70	......	......	......	......
Philadelphia	.10	8.30	9.35	10.99	9.35	9.25	9.20	9.50	12.05	16.58	15.58	20.08	19.33
Pittsburgh**	.15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40	17.10	16.10	19.70	20.45
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30	18.50	17.45	20.75	20.25
San Francisco**	.10	11.00	11.95[2]	11.50	12.25	11.00	10.95	10.75	15.20	18.30	16.35	22.90	20.60
Seattle**		11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	18.60	17.80	22.70	22.20
Spokane**	.15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.58	22.35
St. Louis**	.15	9.07	10.73	11.48	10.73	9.00	9.76	9.17	11.43	17.48	16.48	21.58	19.33
St. Paul**	.15	8.95	9.46	10.69	10.47	8.75	9.48	8.85	11.64	......	16.69	......	21.04

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—¾-2 15/16; Cold-finished bar—C 1018—1" rounds; Alloy bar—hot-rolled 4615—1⅝" to 2⅞"; cold drawn—15/16" to 2⅞" round; Hot-rolled 4140—⅝" to 2⅞" round, cold drawn—15/16" to 2⅞" round.

†† 10¢ zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter.

(Effective Jan. 4, 1960)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	....
Birmingham *R3*	62.00	62.50*	....	....	....
Birmingham *W9*	62.00	62.50*	66.50	....	....
Birmingham *U4*	62.00	62.50*	66.50	....	....
Buffalo *R3*	66.00	66.50	67.00	67.50	....
Buffalo *H1*	66.00	66.50	67.00	67.50	....
Buffalo *W6*	66.00	66.50	67.00	67.50	....
Chester *P2*	68.00	68.50	69.00	....	....
Chicago *I4*	66.00	66.50	66.50	67.00	....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	....	....
Fontana *K1*	75.00	75.50	....	....	....
Geneva, Utah *C7*	66.00	66.50	....	....	....
Granite City *G2*	67.90	68.40	68.90	....	....
Hubbard *Y1*	....	....	66.50	....	....
Ironton, Utah *C7*	66.00	66.50	....	....	....
Midland *C11*	66.00	....	....	....	....
Minnequa *C6*	68.00	68.50	69.00	....	....
Monessen *P6*	66.00	....	....	....	....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	....	66.50	67.00	67.50	....
Sharpsville *S3*	66.00	....	66.50	67.00	....
So. Chicago *R3*	66.00	66.50	66.50	67.00	....
So. Chicago *W8*	66.00	....	66.50	67.00	....
Swedeland *A2*	68.00	68.50	69.00	69.50	73.00†
Toledo *I4*	66-00	66.50	66.50	67.00	....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	....	....	66.50	....	....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel.

Add $1.00 for 0.31–0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01–15.50), $101.00; Keokuk (14.01–14.50), $103.50; (15.51–16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manmanese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7*. Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13;* (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1,* (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8*; Ambridge, Pa., *B7*.

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa , *C2.*

(Effective Jan. 4, 1960)

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STEEL BLUE
SPECIMEN
With DYKEM Steel Blue
Without DYKEM Steel Blue

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STEEL BLUE
Stops Losses
making Dies and Templates

Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench: metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

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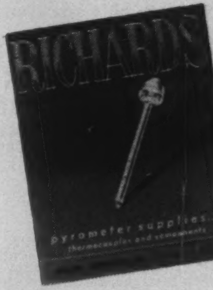

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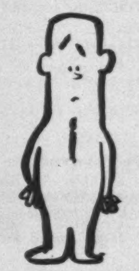
DYKEM
HI-SPOT
BLUE
NO 107

CUT SCRAPER TIME
END NIGHT CLEANUP & MORNING REBLUING

DYKEM HI-SPOT BLUE No. 107 is used to locate high spots when scraping bearing surfaces. As it does not dry, it remains in condition on work indefinitely, saving scraper's time. Intensely blue, smooth paste spreads thin, transfers clearly. No grit; noninjurious to metal. Uniform. Available in collapsible tubes of three sizes. Order from your supplier. Write for free sample tube on company letterhead.

THE DYKEM CO., 2303G NORTH 11TH ST., ST. LOUIS 6, MO.



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FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C	41.00	0.50% C	38.00
0.05% C	39.00	1.00% C	37.75
0.10% C	38.50	1.50% C	37.50
0.20% C	38.25	2.00% C	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si	37.25
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si	28.25
0.025% C (Simplex)	36.75
5-7% C, 61-65% Cr, 5-8% Si	22.00
5% max C, 50-55% Cr, 2% max Si	25.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.

0.10% max. C	$1.29
9 to 11% C, 88-91% Cr, 0.75% Fe	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.15
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload bulk	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload lots, bulk.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% (Bulk) P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed pallets, 2000 lb up to carloads	17.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe	24.95	22.00
98% Si, 1.0% Fe	24.45	21.50

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si	14.60	75% Si	16.90
65% Si	15.75	85% Si	18.60
		90% Si	20.00

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb.	2.40	3.30	4.55

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.	
Carloads, bulk	9.85¢
Ton lots	11.20¢
Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo	$1.50
Ferrocolumbium, 58-62% Cb, 2 in. x D, delivered per pound	
Ton lots	$3.45
Less ton lots	3.50
Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta	$3.40
Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo	$1.76
Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton	$120.00
10 tons to less carload	$131.00
Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti	$1.35
Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti	$1.50
Less ton lots	$1 54
Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	$255.00
Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered	$2.15 (nominal)
Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa.	$1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa.	$1.38
Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.	
Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢
Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5	$1.38
Zirconium silicon, per lb of alloy	
35-40% del'd, carloads, bulk	26.25¢
12-15%, del'd lump, bulk-carloads	9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	
2000 lb carload	$5.50
Ferro Zirconium Boron, Zr 50% to 60%, B 0.8% to 1.0%, Si 8% max., C 8% max., Fe balance, fo.b. Niagara Falls, New York, freight allowed, in any quantity per pound	30¢
Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.	
Ton lots per pound	18.25¢
Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots	$1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up	
10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50
Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over	
No. 1	$1.05
No. 79	50¢
Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.	
Ton lots (packed)	$1.46
Less ton lots (packed)	1.57
Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots	2.15

(Effective Jan. 4, 1960)

MORE THAN 2000

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- Seamless and Welded
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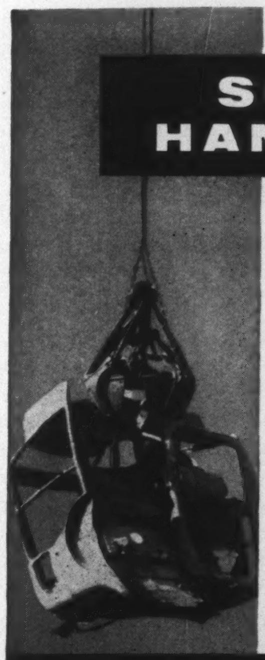

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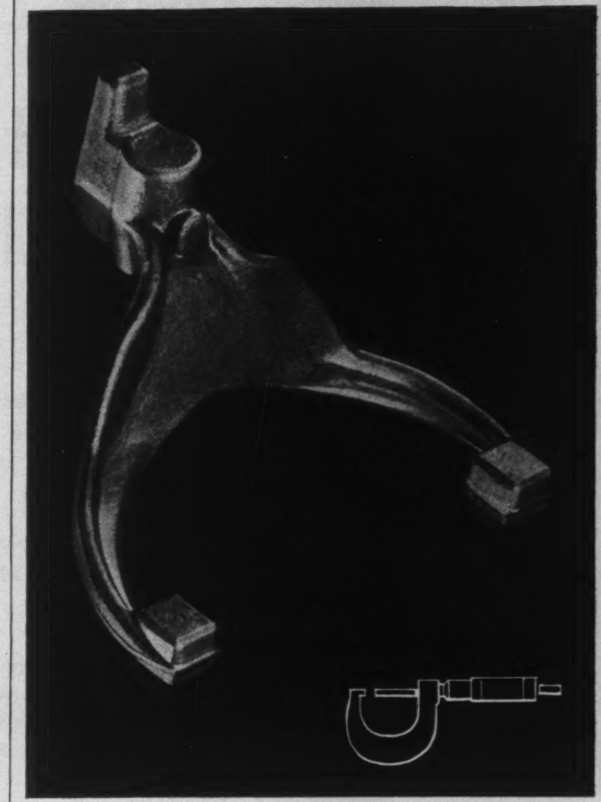

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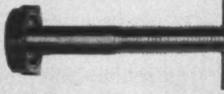
Close-tolerance accuracy which eliminates the need for costly machining is, in itself, a sound reason for specifying Ritco Forgings. A flawlessly smooth surface which helps speed product assembly is still another. Combine these advantages with a forged-in toughness which assures maximum impact resistance and fatigue strength at points of greatest shock and stress and it's easy to see why more and more design engineers write Ritco into their plans. *All* things considered, it will pay you to learn more about Ritco "Bright Finish" Forgings now. Send us your blueprints for estimates at no obligation.



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Qu.	H.P.	Make	Type	Volts	Speed
1	1750	G.E.	M-579BS	4800	1800
1	1500	G.E.	MT	6600	1187
1	800	Whse.	CW	550	1776
1	600	Whse.	CW	220/440	900
1	600	Whse.	CW-4-32D-15	440	1778
1	500	Whse.	CW	550	350
1	300	A.C.	ANY	440/2300	720
1	300	G.E.	MTP561	2200	1800
1	200	G.E.	IM	440/2200	589
1	125	G.E. unused	MT-557	220/440	1200
1	100	G.E.	MT-564	440/220	450
1	250	G.E.	IM-16	220/440	875
1	250	A.C.	ANY	550	600
1	250	Cr. Wh.	Size 29Q	2300	350
1	250	G.E.	MT-424Y	4000	257
1	250	G.E.	IE-13B	220	1800
2	200	Whse.	CW-890	2300	1775
2	200	G.E.	IM-17A	2200	435
3	100	A.C.		440	695

SQUIRREL CAGE

Qu.	H.P.	Make	Type	Volts	Speed
1	800	G.E.	KT-573	2200	1180
1	500	G.E.	FT-559AY	2200	3600
2	500	Whse.	CS-1115	3300	863/445
4	500	Whse.	CS-1216	2200	500
2	450	Ell.	F-3910	2200	1200
1	400	Whse.	CS-7151-610H	6600/4000	3585
1	300	Whse.	CS-1002	2300/440	600
1	250	Whse.	CS-875S	2200	1775
1	200	Whse.	CSP-581S	440	3450
2	200	Whse.	CS-855S D.P.	220/440	1750
1	150	G.E.	FT-558	2200	875
1	150	Whse.	CS	440	580
1	125	Whse.	CS-764C	220/440	1160
3	100	Whse.	CS-760C	2200/440	1100
1	100	Whse.	B.B.CS-607	220/440	1780

SYNCHRONOUS

Qu.	H.P.	Make	Type	Volts	Speed
1	6000	G.E.	ATI .8 P.F.	2200/6600	600
1	3500	G.E.	TS 1.0 P.F.	4600/2300/4000	360
1	2000	G.E.	ATI	2300	900
2	1750	G.E.	ATI	2300	3600
1	1750	G.E.	TS	2300/4600	900
1	700	G.E.	TS .8P.F.	2300	1200
1	350	Whse.	1.0P.F.	440	900
2	350	G.E.	ATI 1.0P.F.	2300	150
1	325	G.E.	ATI 1.0P.F.	140	1800
2	300	El Mach.	BRKT	2200	1200

BELYEA COMPANY, Inc.
47 Howell Street, Jersey City 6, N. J.
Tel. OL 3-3334

Used Machine Sales To Climb in 1960

Business is expected to run well through the year. Recovery from the steel strike slowdown continues.

Exports will play an important part in making 1960 a profitable year.

▪ Used machinery dealers are looking for a good year in 1960. They feel stronger industrial buying desires; increased material, manpower and capital and an improving export picture will combine to make a profitable year.

One sign of their optimism is the fact that most dealers are increasing inventories. In December, 1957 dealers had an average 104 select machines on hand. At the end of last month the number had jumped to about 155 machines.

Steady Climb — Industry sales have increased steadily since the lowpoint reached in 1957. The increase has been constant and firm, with only seasonal and temporary declines.

Dealers have also improved customer service. R. K. Vinson, executive director, Machinery Dealers National Assn., says the weekly inter-dealer exchange of reporting "newly acquired" machines and the inter-dealer listing of "guaranteed" machines have helped business and customers.

Wider Field—Using these systems, a dealer can offer a customer a wider selection of machines carefully inspected by professional machine tool appraisers. Also, hard-to-find machines can be more easily located through the MDNA's weekly "wanted" bulletin mailed to the membership.

The MDNA reports that machines made during World War II are still being absorbed by industry. Most of the machine tools, used in making defense materials, are in good shape and about 20,000 to 25,000 are being bought every year.

Foreign Markets—American used machines are popular abroad. Dealers expect that demands from foreign users will be greater this year than they have been in the past.

Markets are developing in nations where metalworking is still in an infant stage. On the other hand, many industrialized countries of Europe are calling for greater quantities of used American-made machine tools.

Reports Good — Domestic markets, for the most part, are recovering from the doldrums caused by the steel strike. Dealers in most parts of the nation report that sales are again on the upswing and that they expect them to stay that way for some time. Only in a few areas (Detroit is one) do dealers say that business is still poor.

Final settlement of the steel issue should bring even better business. Many firms are looking around for good used machines, but are waiting for final settlement before making any purchases.

ROLLING MILLS—STEEL WORKS EQUIPMENT

ROLLING MILLS

1—4-HIGH HOT STRIP MILL, single stand, reversing, 25" & 42" x 66".

1—40" PINION STAND, 2-high, for blooming mill; with spare pinions.

1—PLATE MILL, 3-high, 34" & 22" x 112".

1—28" BILLET MILL, 3-high, 2 roll stands, 2 pinion stands.

1—28" x 40" HOT STRIP MILL, 2-high, with 2500 HP D.C. reversing motor.

1—18" 3-HIGH BAR MILL, with pinion stand and roll stand.

1—10" BAR MILL, two stands 3-high, one stand 2-high, 600 HP drive.

1—10" ROD MILL, 2-high, 14 passes.

1—9" 3-HIGH BAR MILL, 5 stands, with variable speed drive and M-G set.

1—32" & 20" x 62" SHEET ROUGHING MILL, 3-high, with mechanical tables.

1—28" 2-HIGH PINION STAND for sheet mill.

3—28" COLD SHEET MILL STANDS, 2-high.

1—16" x 22" COLD MILL, 2-high, with 100 HP A.C. motor and gear reducer.

1—10" x 14" COLD MILL, 2-high, with extra rolls.

1—8" x 10" COLD MILL, 2-high, with 40 HP A.C. motor, extra rolls.

1—5½" x 10" COLD MILL, 2-high, with 10 HP A.C. motor, extra rolls.

1—3½" & 8" x 5½" COLD MILL, 4-high, with payoff and take-up reel.

1—YODER INDUCTION WELD TUBE MILL, capacity 2" to 8" O.D. non-ferrous tubing.

GEAR REDUCTION SETS

1—2000 HP GEAR DRIVE, ratio 10 to 1.

1—1200 HP GEAR DRIVE, ratio 3.73 to 1.

1—1200 HP GEAR DRIVE, ratio 5.92 to 1.

1—500 HP GEAR DRIVE, ratio 10 to 1.

1—500 HP GEAR DRIVE, ratio 7.83 to 1.

1—150 HP GEAR DRIVE, ratio 90.66 to 1.

MOTORS

1—5200 HP reversing, 0/100 RPM, 700 volts D.C.

1—3500 HP Allis-Chalmers, 514 RPM, 11000/3/60.

1—2000 HP General Electric, 200/400 RPM, D.C.

1—1200 HP Allis-Chalmers, 353 RPM.

1—500 HP G.E., 327 RPM, 2200/3/60.

1—500 HP G.E., 155/500 RPM, D.C.

SHEARS

1—BLOOM OR SLAB SHEAR, unused, capacity 14" x 18" or 6" x 30" hot.

1—BILLET OR BAR SHEAR, United Eng. No. 4, vertical open-side, 3½" square.

1—BAR SHEAR, vertical open-side, 1½" round.

1—ALLIGATOR SHEAR, Canton No. 4, 4" round.

2—SHEET SQUARING SHEARS, capacity 156" x ¼".

1—SIDE TRIMMER for strip 48" wide x 3/16" thick.

1—FLYING SHEAR FOR HOT STRIP, United Eng. 72" wide x ½" thick.

1—34" x 192" ROLL GRINDER with motors for main drive, head stock, carriage, cross feed, and oil pump. Grinding wheel size 36" x 4". Good condition, little used.

FURNACES AND FURNACE EQUIPMENT

1—BESSEMER CONVERTER, 25 tons capacity, with drive motors.

2—65-TON ELECTRIC MELTING FURNACES, 19' shell, top charge.

1—1-TON ELECTRIC MELTING FURNACE, side charge, with spare transformer.

2—PACK FURNACES FOR HOT SHEET MILL, 62" x 60', double chamber, continuous.

1—200 TON INGOT STRIPPER CRANE, 50' span, 4'6" stroke, tongs open 2'1" min., 5'10" max.

1—OPEN HEARTH CHARGING MACHINE, 5 tons, Wellman Eng. Co. high type 11' span.

2—90-TON HOT METAL TRANSFER CARS, standard gauge, electrically operated.

LEVELLERS AND STRAIGHTENERS

1—72" ROLLER LEVELLER, work rolls 2⅝" dia. back-up rolls, range .025" to .150".

1—WIRE STRAIGHTENER AND CUT-OFF MACHINE, Medart, automatic, ¼" to ⅝" diam.

1—STRAIGHTENER AND CUT-OFF MACHINE, Hallden, 25 HP A.C. motor, .312" to .562" diam.

MISCELLANEOUS

1—BILLETEER, size "C," for conditioning billets up to 13" square.

1—BUILDING, structural steel, 50' x 396', with 25' lean-to, runway for 20-ton crane.

1—DOUBLER for hot steel sheets, mechanical roll type, capacity 44" x 144".

1—ROLL LATHE, 36", will turn 2 rolls at once, enclosed headstock.

1—PICKLING MACHINE for sheets, Aetna-Standard, Taylor design, with rocker arms.

1—PRESS, 1500-ton steam hydraulic forging, 4 posts each 14" diam., main ram 24" diam.

1—DOUBLE PULLEY MAGNETIC SEPARATOR, Stearns Magnetic Inc., 21" wide, with electrics.

1—SWAGING MACHINE, for 2" O.D. tubes, with 25 HP motor.

6—TINNING LINES for making tin plate by hot dip process, with Dexter feeders.

★ ★ ★ ★ SPECIALS ★ ★ ★ ★

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1—24" x 36" Farrel-Birmingham COLD MILL, 2-high. Speed 17.6 RPM or 110.6 FPM. Manual screwdown. Bronze bearings. Includes pinion stand, speed reducer, and 400 HP motor, 450 RPM, 4600 volt, 3 phase, 60 cycle. 6 forged steel rolls.

1—22" x 36" Farrel-Birmingham COLD MILL, 2-high. Speed 26 RPM or 149.8 FPM. Manual screwdown. Textolite bearings. Includes pinion stand, speed reducer, and 600 HP motor, 450 RPM, 4600 volt, 3 phase, 60 cycle. Forged steel and cast iron rolls, one pair each.

1—Roller conveyor system for handling slabs and coils of metal to and from the above mills. Made by Mathews Conveyor Co.

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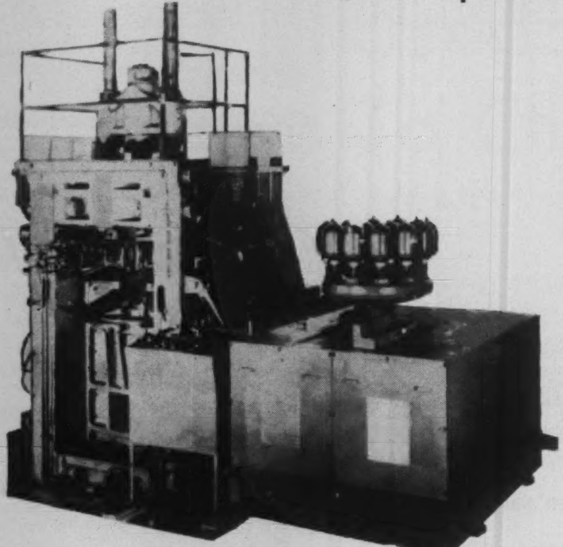

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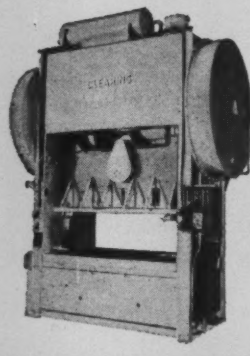

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2 spindle No. 201¼ Barnes, H.D.
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3 spindle 28" Cincinnati-Bickford Upright Drill, m.d., No. 4 M.T.
4 spindle No. 201¼ Barnes H.D., m.d.
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Model H3 Barnes Hydram, m.d.
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20" Barnes, m.d., 1940
20" Barnes All Geared Self-Oiling Drill & Tapper, m.d.
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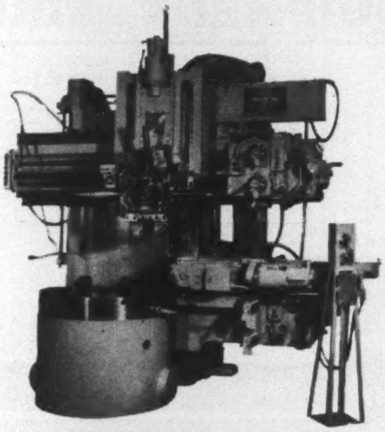

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Speeds to 200 RPM
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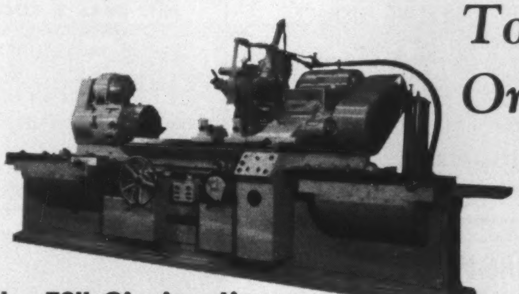

16" x 72" Cincinnati Roll Grinder
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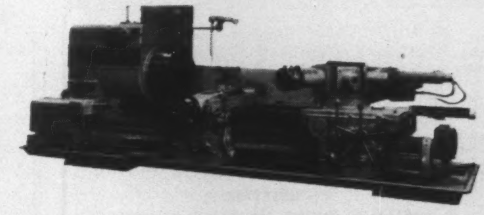

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40" Stroke, Bed 68"x68"

60,000# BTE UNIVERSAL HYDR. TESTING
MACHINE, with Range Changer, Strain Recorder,
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15 ton Shepard Niles	55'6"	Span 220/3/60
40 ton P&H	75'	Span 440/3/60

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1—LOGEMAN BROS. Scrap baler, model #122-PX-60, baling chambers 60" long, 14" wide, 18" deep. G.E. 50 HP motor. Ser. #12326.

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1—AMERICAN Turnings Crusher, Model #S.T.T. 1700# Cap. 3000# per hr. 40 HP Ser. #3546. New 1951.

1—JEFFREY Swing Hammer Pulverizer Model B3. Size 24" x 20". 40 HP. Ser. #4557. New 1946.

PUNCHES

1—BEMENT MILES Single End Punch 100 ton B.G. 42" throat, 18" gap, stroke 2", SH 11", Hand adj. ram. Ser. #3006. Arch jaw.

1—LONG & ALLSTATER 200-ton Gang Punch, double back geared 2" stroke, 6" shut height. Bed 12" x 108", ram 9" x 108", 98" between housings. 7¼" dia. shaft. Hand adj. to ram Jaw clutch.

1—BERTSCH 25-ton single end punch. Throat 18" stroke 1", arch jaw. Bed 6" x 9". Jaw clutch. Hand adj. to ram. Dia. shaft 2½".

SHEARS

1—LONG & ALLSTATER Double angle shear #1. Cap. 6" x 6" x ⅝" angles. Table 24 x 53". Jaw clutch.

1—CANTON #22 All Steel Scrap shear. 24" blade w/Wagner 7½ HP. Ser. #46198.

TRAVOGRAPH

1—AIRCO DB Travograph Cutting Mach. Model 10. 5 cutting heads, electric high pressure straight line cutting, new manual tracer. ⅓ HP motor. Ser. #1016.

UPSETTER

1—AJAX 3" Upsetter, air clutch & air brake. 30 HP motor with pit conveyor. Ser. #4254. New 1947.

WELDING POSITIONERS

1—RANSOME Welding Positioner. Size 160P. Ser. #53438. Table 53" x 53". Power tilting & elevation C of G 12" above table. 12" eccentric. Geared table. 1956.

1—P & H #2 Welding Positioner. 2500# cap. Ser. #WP7856. 42" dia. Table manual tilt & elevation of table. Rotary operation geared motor driven with ⅓ HP.

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Typical Package Drives

(1) 3000-H.P. Gen. Elec. Motor, 600-V.D.C. 90/180 R.P.M. with,
(1) 3000-K.W. 3-unit Allis-Chalmers M.G. set, 600-V.D.C. with 5000-H.P. Syn. Motor 13800/6900/4160-V., 3 ph., 60 cy. & mag. F.V. starting equipment.

(2) 600-H.P. Al.Chal. Motor, 600-V.D.C. 300/600 R.P.M. with,
(1) 1000-KW. 3-unit M.G. set (2) 500-K.W. 600-V.D.C. Generators, & 1500-H.P. Syn. Motor, 2300-V., 3 ph., 60 cy. & starting equip's.

(2) 300-H.P. Whse. Motors, 230-V.D.C. 300/600 R.P.M. with,
(1) 600-K.W., Gen. Elec. 3-unit M.G. Set (2) 300-K.W. Generators & 750-H.P. Syn. Motor, 4160/2300-V., 3 ph., 60 cy. & Mag. F.V. starting equipment.

(Any above items can be purchased separately)

ADJUSTABLE SPEED MOTORS

QU.	H.P.	MAKE	VOLTS	R.P.M.
1*	2550	Whse.	700	108/162
1*	2200	Whse.	600	92/132
1*	2000	G.E.	600	200/400
1*	2000	G.E.	350	230/350
1*	1750	G.E.	600	200/300
1*	750	Whse.	250	200/400
4*	700	Whse.	250	300/700
2*	645	S & S	300	1000
1	600	Whse.	250	110/220
2	235	Whse.	230	325/975
1	150	Whse.	230	400/1200
1	125	Whse.	230	450/900
1	75	Whse.	230	250/1000

SLIP RING MOTORS

3 Phase—60 Cycle

QU.	H.P.	MAKE	TYPE	VOLTS	R.P.M.
1	3500	G.E.	Mill	6600/4160	240
1	2500	G.E.	Mill	2300	296
1	1800	Whse.	Mill	2300	252
1	1200	G.E.	Mill	2200	295
1	1000	Whse.	CW	2300	441
1	500	Ideal	S-4-20	4800	708
1	500	Al.Chal.	ANY	2200	505
1	500	Al.Chal.	ANY	2200	293
1	400	Al.Chal.	ANY	2200	505
1	400	Whse.	CW	2200	290
1	350	G.E.	I-M	2200	1180
1	350	G.E.	MT-412	2200	450
1	300	Whse.	CW-1012	2200	704
1	250	Whse.	CW	4160/2400	710
1	250	G.E.	MT-414	2200	300

SYNCHRONOUS MOTORS

3 Phase—60 Cycle

QU.	H.P.	MAKE	P.F.	VOLTS	R.P.M.
1	6000	G.E.	Unity	2300	90
1	1750	G.E.	Unity	2200	3600
1	1500	Whse.	80%	2300	514
2 (New)	1400	Whse.	80%	4160	450
1	900	G.E.	Unity	460	300
1	700	El.Mchy.	Unity	440	200
1	500	El.Mchy.	80%	2300/440	720
1	450	Whse.	Unity	2200	128
1	300	G.E.	80%	2200/440	600

TYPICAL MILL & REEL DRIVES

(2) 3500-K.W. Al.Chal. 5-unit Sets of (2) 1750-KW Gen., 350/700-VDC, (1) 5000-HP Syn. Motor, 13800/6900/4160-V., 3 ph., 60 cy. (1) 40-KW & (1) 10-KW exciters.
(1) 600-K.W. Gen. Elec., 3-unit Set of (2) 300-KW, 250-VDC gen. & (1) 750-HP Syn. Motor, 4160/2300-V., 3 ph., 60 cy. & Magnetic F.V. Starting Cubicles.
(1) 200-K.W. Gen. Elec. 3-unit Set of (2) 100-KW Gen., 250-VDC, B.B., & 300-HP Syn. Motor 2300-V., 3 ph., 60 cy., Mag. F.V. Starting equipment.

STANDARD GENERAL PURPOSE M.G. SETS

QU.	KW	MAKE	D.C. VOLTS	A.C. VOLTS
1	2400	G.E.	250	4600/2300
1	1500	G.E.	250	4600/2300
1	1250	G.E.	132/265	4160
2	500	Whse.	280	4000/2300
1	400	G.E.	275	4000/2300
1	300	G.E.	250	4000/2300
4	250	Whse.	250	2300
2	200	G.E.	250/275	4000/2300
2	150	G.E.	250	440
1	125	G.E.	250	440
1	100	G.E.	250	440

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13' ¼" Shear, 20" gap, extra blades, 10' squaring arm $4,000.00
10' ⅜" Shear, 16" gap.
10' 14 ga. Pexto Shear, Model S2120.
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8' 12 ga. Sturdybender Press Brake.
5' 14 ga. Dreis & Krump Press Brake.
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43 ton Niagara Punch Press, 18" throat.
60 ton Niagara Punch Press, 22" throat.
8 ga. Niagara Circle Shear and Flanger.
FA18 Grob Filer, 18" throat.
#180 Niagara Comb. Rotary Mach., 14 ga.

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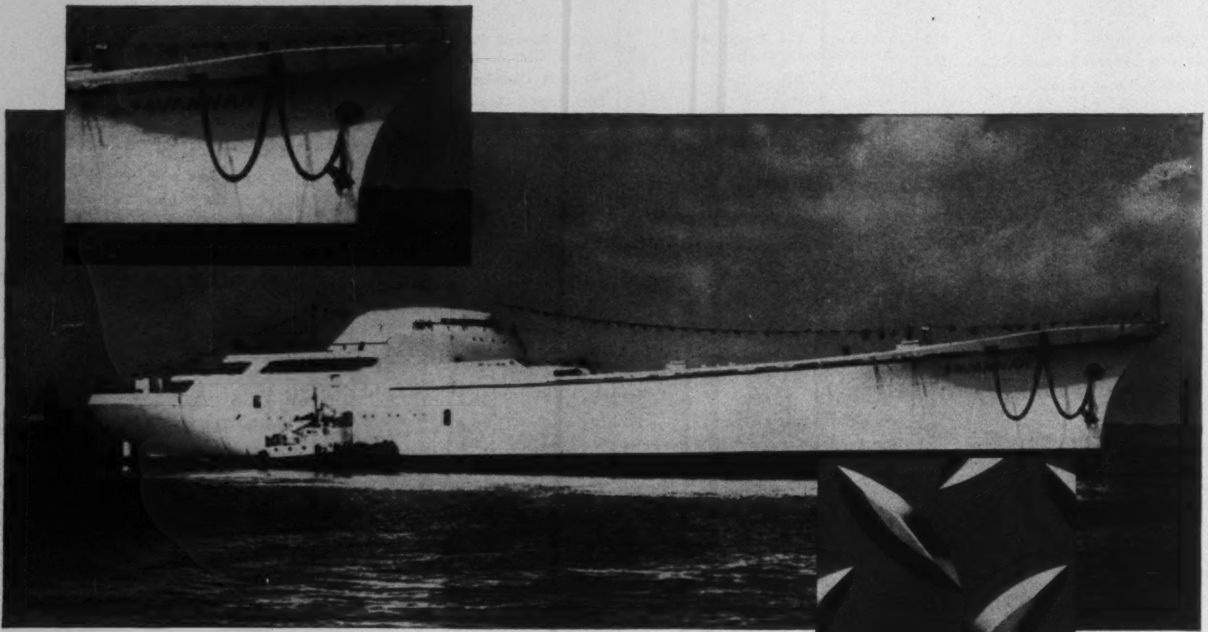

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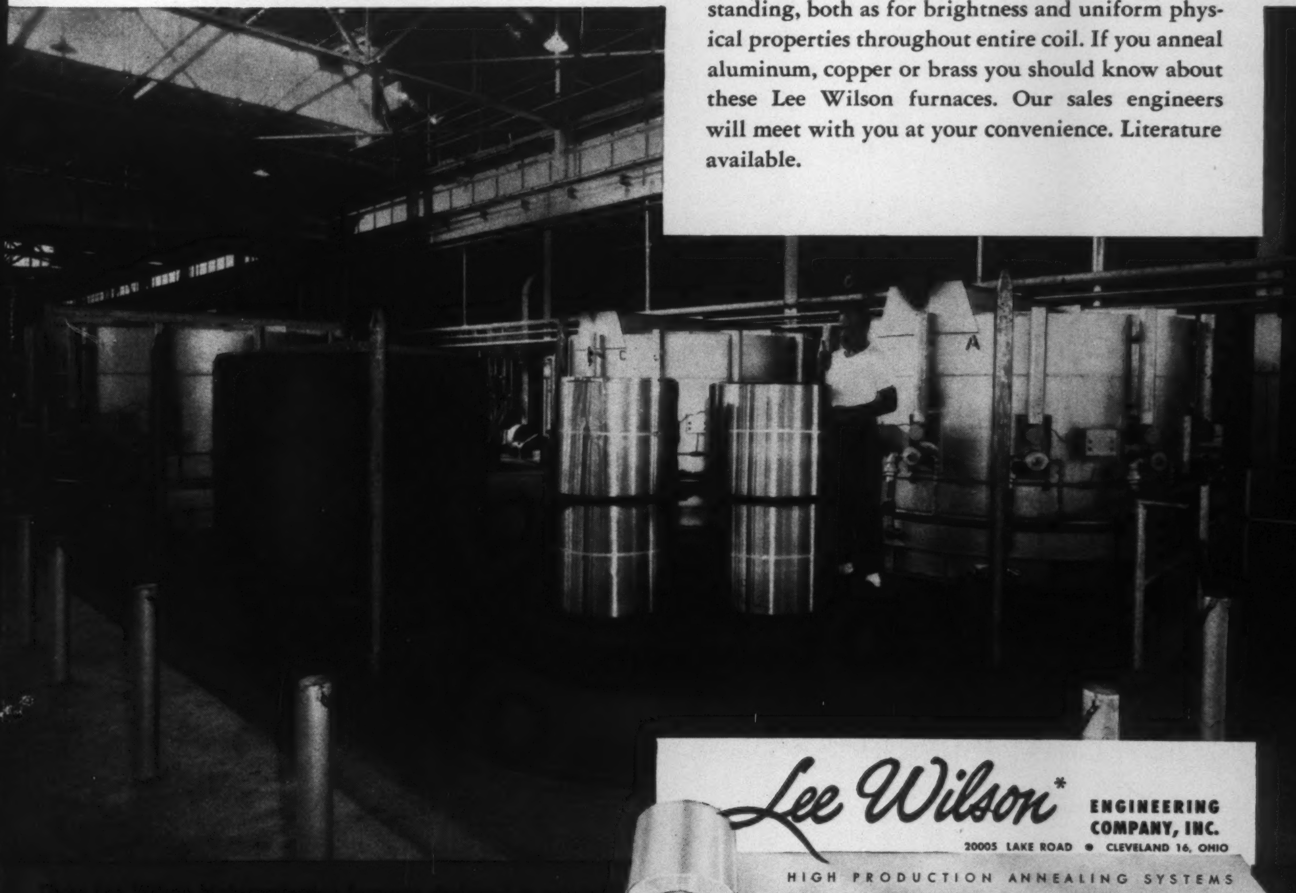
Coils show no edge damage even when stacked three high.

An up-to-the-minute report on the

Bright Annealing of thin gauge Aluminum Coils

Engineers at the Scovill Manufacturing Company, Waterbury, Conn., have definitely proved that thin gauge aluminum coils can be bright annealed while standing on edge without edge damage. This means that aluminum producers and converters now have greater control of annealing and greater production flexibility than ever before, because they will now be able to utilize the high-convection, bell-type furnace designed and perfected by Lee Wilson.

Scovill engineers successfully annealed large coils of .025 gauge under standard annealing practice. Lighter gauges were annealed by placing aluminum discs between coils. Annealing results were outstanding, both as for brightness and uniform physical properties throughout entire coil. If you anneal aluminum, copper or brass you should know about these Lee Wilson furnaces. Our sales engineers will meet with you at your convenience. Literature available.



Three Lee Wilson high-convection furnaces designed to [illegible] 2,500 pounds of aluminum coils per [illegible]

Lee Wilson* ENGINEERING COMPANY, INC.
20005 LAKE ROAD • CLEVELAND 16, OHIO

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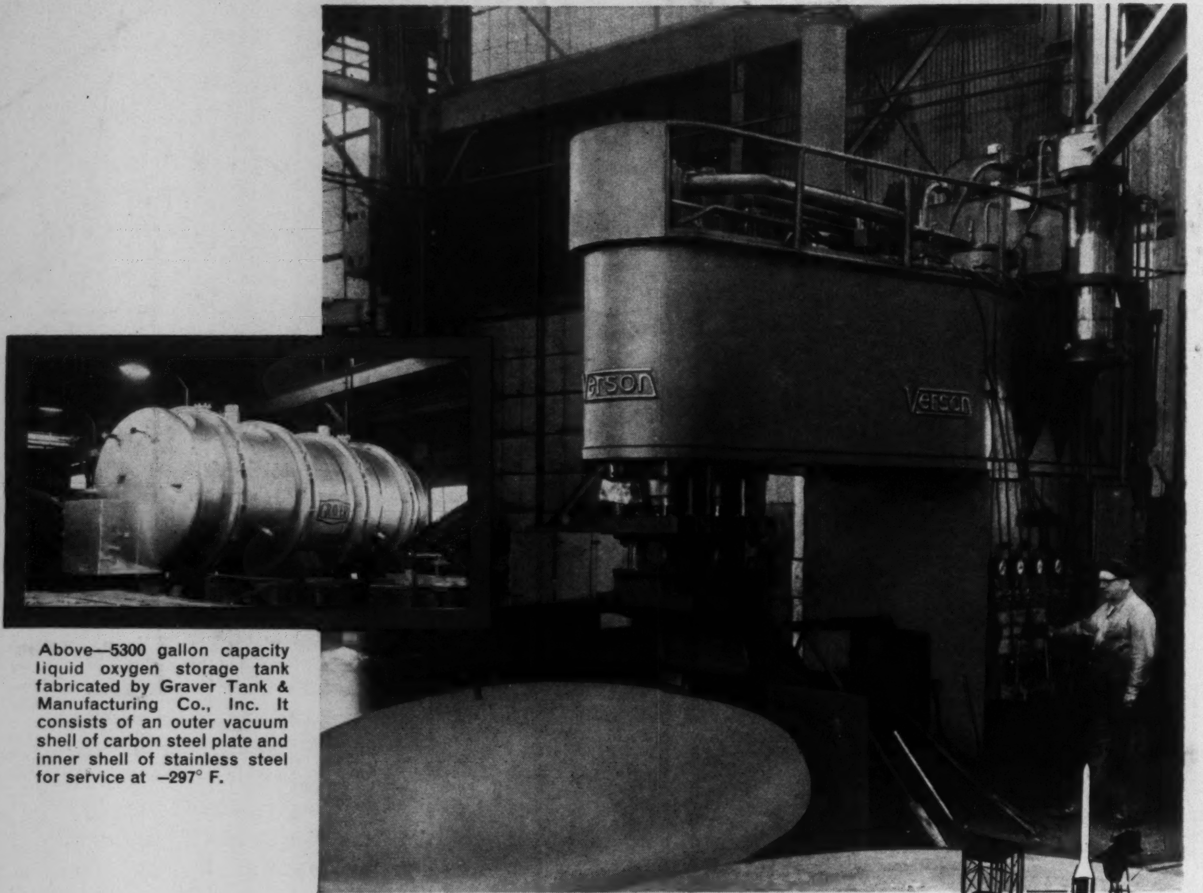
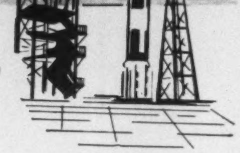
MAKE THE BEST METALS BETTER

* Originators and Leading Producers of Opened Coil and Single Stack Furnaces



Above—5300 gallon capacity liquid oxygen storage tank fabricated by Graver Tank & Manufacturing Co., Inc. It consists of an outer vacuum shell of carbon steel plate and inner shell of stainless steel for service at −297° F.

How to make "Filling Station" tanks for Missiles



Graver flanges 11′ heads for liquid oxygen tanks in -Verson- flanging press

If you should ever want to make a tank for holding liquid oxygen, you'll find it takes a lot of know-how plus the right kind of equipment.

Graver Tank & Manufacturing Co., Inc., Division Union Tank Car Company, is a century old fabricator who knows the importance of good equipment. The Verson 375 ton hydraulic flanging press shown above is a good example.

Installed at Graver's East Chicago, Indiana, plant, it is shown flanging the 11′ diameter 3/8″ ASME carbon steel heads for the outer shell of liquid oxygen storage tanks. Stainless steel heads for an inner shell are also fabricated in the press. The press has two vertical rams and one horizontal ram, each of 125 tons capacity plus a bed cylinder of 125 tons capacity. All are individually controlled.

Even though liquid oxygen tanks are not your line, you should take advantage of Verson's experience for all your metal forming requirements. Verson's experience is broad and intensive, your best assurance of getting the kind of help you need. For specific recommendations, send an outline of your requirements.

231-C

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